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JOURNAL OF EXCEPTIONAL CHILDREN

Harry J. Baker

Dr. Harry J. Baker, director of the Psychological Clinic, Detroit, is the immediate past president of the International Council, and was the president at the time the studies published in this issue of the Journal were undertaken.

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IN THIS ISSUE

Summary of Studies

Relating to Exceptional Children

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In This Issue

SUMMARY OF STUDIES
RELATING TO EXCEPTIONAL CHILDREN

Edited by Carter V. Good
University of Cincinnati
Chairman of Research Committee
International Council for Exceptional Children

1938

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Summary of Studies Relating to Exceptional Children

EDITED BY CARTER V. GOOD

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Preface

EDW. H. STULLKEN

The International Council for Exceptional Children is happy to present this monograph to its members through the Journal of Exceptional Children. Two years ago under the leadership of Dr. Harry J. Baker, who was at that time president, the membership became interested in a plan to summarize the research studies that had been made in the field of special education. Dr. Baker was able to enlist the services of Dr. Carter V. Good of the University of Cincinnati to undertake the direction of the work, and various people were selected to summarize the research, each in a given area.

Last February, a preliminary report was presented at the annual convention of the Council in Cincinnati, following which the board of directors voted to publish it in its final form in the Journal. Through arrangements with the publisher, the Council is herewith able to present this *Summary of Studies Relating to Exceptional Children.*

The study, in general, emphasizes the research of the past ten years, including methods of teaching, instructional plans, and characteristics of various types of exceptional children.

Dr. Good and his associates have attempted to place the report in such form, particularly with respect to conclusions and recommendations, that it will be of unusual value to teachers engaged in special education. It is hoped, however, that the people engaged in regular classroom teaching will find it equally helpful to them in their work.

Introduction: Research Dealing with Exceptional Groups

CARTER V. GOOD

PRESIDENT Baker of the International Council for Exceptional Children suggested in October, 1936, that a Research Committee summarize for the Cincinnati meeting of the Council the research concerned with exceptional children. The speaker, when asked to coordinate the efforts of such a committee, protested that he was not a specialist in any of the areas of special education, but agreed on further urging to draw up a set of suggestions concerning research sources of information on special education and concerning the form for the reports. The Chairman of the Research Committee, in accepting this responsibility, has been quoted somewhat humorously by an officer of the Council to this effect: "I don't know anything about exceptional children, but am willing to take this opportunity of learning something about them," which is close enough to the truth to pass for such. Largely through the efforts of Dr. Baker the following persons agreed to summarize the studies in the areas designated:

Blind, Kathryn E. Maxfield, Arthur Sunshine Home and Nursery School for the Blind, Summit, N. J.

Deaf, Clara E. Newlee, Parker Practice School, Chicago, Ill.

Hard of hearing, J. C. G. Loring, Cambridge, Mass.

Crippled, Grace F. Woolfenden, Oakman School, Detroit, Mich.

Low vitality, Louise Strachan, National Tuberculosis Association, New York City.

Miscellaneous, Louis E. Krumholz, Psychological Clinic, Detroit, Mich.

Speech, Wendell Johnson, University of Iowa, Iowa City, Iowa.

Behavior, Edw. H. Stullken, Montefiore School, Chicago, Ill.

Superior and gifted, Dorothy E. Norris, Major Work Classes, Cleveland Public Schools, Cleveland, Ohio.

Special talents and defects, with special reference to reading disability, Irving H. Anderson, Harvard University, Cambridge, Mass.

The plans for studies of the feebleminded, of sight saving and of the various types of special talents and defects could not be carried out due to inability of the persons selected to serve on the committee. However, these areas are covered in part by a recent bibliography which includes references on the blind and partially seeing, crippled, deaf and hard of hearing, delicate, gifted, mentally retarded, socially or emotionally maladjusted, and speech defectives.[1]

Each member of the Committee was asked to cover his field as completely as possible within a space of some 2,000 words, including unpublished Doctors' and Masters' theses, as well as published sources. The importance of preparing a connected topical summary has been stressed, with attention given to major generalizations, promising techniques of research, and problems for further investigation.

Plans have been made to publish the reports of the Committee, as a special monograph of the Council. On the present program some of the major findings concerning the mentally talented and accelerated will be reported by Dorothy E. Norris, and concerning physical defects by Douglas E. Scates. It is hoped that in the future, possibly at five-year intervals, similar research reports may be prepared for members of the Council and other interested persons.

The speaker, when asked by Dr. Baker to outline for this session of the Council the work of the Research Committee, thought it of significance to present as a supplement to the Committee's work an analysis of the extent of graduate research dealing with exceptional groups. Therefore, the annual bibliographies of research in education for the six years, 1929-1935, published by the U. S. Office of Education, were analyzed to find the types of exceptional groups treated in graduate theses, as well as the graduate institutions represented.

Table I shows by years and topics the number of Doctors' and Masters' theses in the field of exceptional education. In a few instances a title has been classified under more than one heading; for example, a study of children with both hearing and speech defects. Therefore, the totals in Table I are

1. Elise H. Martens and Florence E. Raynolds. **An Annotated Bibliography on the Education and Psychology of Exceptional Children.** Pamphlet No. 71. Washington: Office of Education, 1937. Pp. iv + 42.

larger than in Table II. Some of the theses deal with adults, especially in the area of delinquency; no attempt has been made to ascertain specifically which studies are concerned only with children.

It is a matter of surprise that more than 41 per cent of the total theses deal with problem cases, delinquency, and social maladjustment. Apparently it is characteristic of human nature and social agencies and institutions to devote most time and energy to those problems which, because of their very acuteness, force themselves into the focus of attention. To a lesser extent a similar conclusion can be reached from the nearly 13 per cent devoted to the backward, dull, and feebleminded as compared with the less than 9 per cent concerned with the superior and gifted. The nearly 12 per cent in the area of speech is due in a large measure to the efforts of workers at the State University of Iowa. It is a matter of serious concern that in a six-year period so few theses in graduate departments of education have been written on the problems of the blind and defective vision, deaf and hard of hearing, crippled, and the emotionally and mentally disordered. The number under the last heading would have been much smaller except for a series of Masters' studies at Smith College in 1933-34. Most of the studies in the miscellaneous group are general treatments of special schools and classes rather than tubercular, cardiac, or handedness cases. It is probable that some theses accepted in graduate departments of psychology, sociology, and medicine have a bearing on the education of exceptional groups, but no comprehensive and convenient sources as in education are available for a systematic canvass of such studies. It is possible that the limited number of special-education courses, professors, and students in graduate departments of education is an explanation of the relatively small number of theses in certain of the areas listed in Table I.

Table II reports the number of Doctors' and Masters' theses on exceptional groups, accepted at the various colleges and universities from 1929 to 1935. As early as 1930 there were 139 schools offering graduate degrees in education, of which only 83 are represented in Table II, and many of these with but a single entry in the six year- period. Table III lists the twelve institutions with ten or more theses on exceptional groups within the six-year period represented. Occasionally a graduate school concentrates its study of special education in a particular area, although no other concentration comparable with that of Iowa in speech was apparent in the present analysis. It is not to be assumed that sheer number of studies made is an accurate measure of the contribution made. However, there is available no means of weighing the significance of the theses from the various institutions, except in so far as such evaluation is incidentally revealed in the reports of members of the Research Committee of the Council.

The total number of Doctors' and Masters' theses on exceptional groups duriag the six-year period is less than 4 per cent and 3 per cent respectively of all Doctors' and Masters' studies in education for the same period. This is indeed a small percentage when compared with the number of children considered as exceptional in some respect or other. When the figures in the following list of types of exceptional children are added and allowance is made for inclusion of mentally accelerated and gifted children, it appears that, if there were no duplication in the list due to a given child having more than one type of defect, more than 30 per cent of our 45,000,000 youth require special consideration in the solution of their educational problems. A more conservative estimate is that ten million children need special education facilities, which number is the equivalent of one-third of the 30,000,000 total present enrollment in elementary and secondary schools, although not all of the ten million are now in school. The conclusion is immediately apparent that in graduate theses much more attention should be given to the problems of special education.

NUMBER OF EXCEPTIONAL CHILDREN OF VARIOUS TYPES*

Blind	14,400
Partially seeing	50,000
Impaired hearing	3,000,000
Defective speech	1,000,000
Crippled	300,000
Tubercular	382,000
Tuberculosis suspected	850,000
Weak or damaged hearts	1,000,000
Malnourished	6,000,000
Behavior problems	675,000
Mentally retarded	450,000
Total	13,721,400

Based on a sampling of one-half the Doctors' studies under way, there are in progress during 1936-37 approximately 50 Doctors' theses in the field of special education. Since the typical doctorate study re-

* The White House Conference on Child Health and Protection. **Special Education: The Handicapped and the Gifted**, pp. 5-6. New York: Century Co., 1931.

quires an average of two years for completion, it appears that some 25 such theses in special education should be finished annually within the immediate future. No similar information concerning Masters' theses under way is available.

If this brief analysis has revealed to the members of the Council and others the extent to which problems of exceptional groups have been investigated in graduate theses, the areas which might well be given additional emphasis in the future, and the extent to which graduate institutions have participated, its purpose has been accomplished. By all means, qualified students, professors, and graduate schools should consider the desirability of studying the problems of the exceptional child to an extent more nearly in keeping with the ratio of handicapped children to the total school population.

Table I

FREQUENCY WITH WHICH EXCEPTIONAL GROUPS WERE INVESTIGATED IN GRADUATE THESES, 1929-1935

Topic or Area	1929-30		1930-31		1931-32		1932-33		1933-34		1934-35		Total 1929-35		Grand Total
	D*	M*	D	M	D	M	D	M	D	M	D	M	D	M	
1. Blind, Defective Vision		3	1	1	2	3	1	6		4		5	4	22	26
2. Deaf, Hard of Hearing		2	2	3	1	3	1	2	1	3	2		7	13	20
3. Crippled		2		4	1	1		5		3	1	2	2	17	19
4. Speech	2	4	1	4	2	10	1	14	4	9	2	10	12	51	63
5. Superior, Gifted	1	14		8	4	5	2	7	2	2		1	9	37	46
6. Backward, Dull, Feeble-minded	2	12	2	10	2	11	2	7	1	5	2	13	11	58	69
7. Emotional Maladjustment, Mental Disorder	1	2		1	2	2		1		11	1	2	4	19	23
8. Problem Cases, Delinquency, Social Maladjustment	6	16	3	36	6	27	5	40	6	41	8	28	34	188	232
9. Miscellaneous, T. B., Cardiac, Handedness, etc.; General Treatments of Special Schools and Classes	1	3	2	5		8		12	3	6		6	6	40	46
Total	13	58	11	72	20	70	12	94	17	84	16	67	89	445	534

* D: Doctors' theses; M: Masters' theses.

Table II

NUMBER OF GRADUATE THESES ON EXCEPTIONAL GROUPS ACCEPTED AT AMERICAN INSTITUTIONS, 1929-1935

Institution	Doctors'	Masters'	Total
University of Alabama		3	3
Ball State Teachers College, Muncie, Indiana		1	1
Boston University		8	8
Brown University		1	1
Bryn Mawr College	1		1
University of Buffalo		1	1
Butler University		1	1
University of California	5	6	11
Catholic University of America		10	10
University of Chicago	2	6	8
University of Cincinnati		8	8
Claremont Colleges		1	1
University of Colorado		8	8
Teachers College, Columbia University	18	14	32
Cornell University		1	1
University of Denver		3	3
DePauw University		1	1
Drake University		1	1
Emory University		1	1
Fisk University		1	1
Fordham University		2	2
George Washington University		5	5
Harvard University	1		1
University of Hawaii		4	4
University of Illinois		2	2
Indiana University	1	5	6
Indiana State Teachers College, Terre Haute		6	6
State University of Iowa	12	35	47
Johns Hopkins University	1		1
University of Kansas		4	4
Kansas State Teachers College, Emporia		1	1
Kansas State Teachers College, Pittsburg		1	1
University of Kentucky		2	2
Loyola University, Chicago		5	5
University of Maine		1	1
University of Maryland		2	2
University of Michigan		7	7
University of Minnesota	2	2	4
University of Mississippi		1	1
University of Missouri	2		2
State University of Montana		1	1
New York University	11	24	35
College of the City of New York		7	7
New York State College for Teachers, Albany		5	5
University of North Carolina	1		1
University of North Dakota	1	1	2
North Dakota Agricultural College		2	2
Northwestern University	4	9	13

University of Notre Dame		3	3
Ohio State University	1	25	26
Ohio Wesleyan University		1	1
University of Oklahoma		8	8
Oklahoma A & M College		5	5
College of the Pacific		1	1
George Peabody College for Teachers	1	4	5
University of Pennsylvania	5	1	6
Pennsylvania State College		2	2
University of Pittsburgh		11	11
University of Rochester		1	1
Rutgers University		5	5
St. Louis University		3	3
Smith College		29	29
University of South Carolina		1	1
University of Southern California	2	57	59
Southern Methodist University		4	4
Stanford University	2	8	10
Stetson University		1	1
Temple University	1	21	22
University of Tennessee		3	3
University of Texas		4	4
Texas A. & M. College		1	1
University of Utah		1	1
Utah State Agricultural College		1	1
Villanova College		1	1
University of Virginia	1	2	3
University of Washington	1		1
Washington University, St. Louis		3	3
West Virginia University		1	1
Western Reserve University	1		1
University of Wichita		2	2
College of William and Mary		1	1
University of Wisconsin	4	4	8
Yale University	2	1	3
Total	83	426	509

Table III

INSTITUTIONS WITH TEN OR MORE THESES ON EXCEPTIONAL GROUPS, 1929-1935

University or College	Doctors'	Masters'	Total
University of Southern California	2	57	59
State University of Iowa	12	35	47
New York University	11	24	35
Teachers College, Columbia University	18	14	32
Smith College		29	29
Ohio State University	1	25	26
Temple University	1	21	22
Northwestern University	4	9	13
University of California	5	6	11
University of Pittsburgh		11	11
Stanford University	2	8	10
Catholic University of America		10	10
Total	56	249	305

What Can Research Contribute to our Understanding of the Physically Handicapped?

DOUGLAS E. SCATES[1]

RECENT years have witnessed a profound change in the general attitude toward the handicapped. Earlier attitudes and practices are pictured in Seligman's *Encyclopaedia of the Social Sciences* in the following terms: "Provision of institutional care for public charges in the United States was at first . . . . performed through the almshouse, which was . . . . used for all varieties of public charges, except criminals, without regard to sex, age, health or habit. It harbored paupers and vagabonds, dependent children and epileptics, the insane, blind, deaf, crippled, diseased and aged. It was . . . almost everywhere mismanaged or neglected" (1).

Typical of still older attitudes, we note that, "Among some primitive and ancient peoples the crippled child was exposed to die, and adult cripples were banished or abandoned. Early religious thought ascribed physical deformity to divine punishment for sin, or accepted it as an affliction to be endured" (1). Previous to the present century, the prevailing "attitude toward the disabled had been one of aversion and neglect, or of pity with its attendant almsgiving" (1).

In contrast with these sentiments of an earlier day, we may quote a few statements from the Children's Charter, promulgated by the White House Conference of 1930.

I. For every child spiritual and moral training to help him stand firm under the pressure of life.

II. For every child understanding and the guarding of his personality as his most precious right.

X. For every child an education which, through the discovery and development of his individual abilities, prepares him for life; and through training and vocational guidance prepares him for a living which will yield him the maximum of satisfaction.

XIII. For every child who is blind, deaf, crippled, or otherwise physically handicapped, such measures as will early discover and diagnose his handicap, provide care and treatment, and so train him that he may become an asset to society rather than a liability.

The philosophy underlying these statements is clear. As we endeavor to give the best kind of training we can to the average child, so we will give the best kind of training possible for the child who is not average, but who presents special problems. We no longer look upon special education as charity; we recognize that there are no lasting values apart from those which are created in each new generation of children, and we seek to claim for society the assets which can be realized, with proper care, in each handicapped child.

What has brought about this change in attitude, from the former spirit of disinterest and of charity, to the present feeling of concern and public responsibility? One may say that the change springs from an increased public enlightenment; or, he may say that it has come about through the efforts of organized groups who are interested. But we must not fail to look at what lies behind this increasing enlightenment, and what has guided the interest and work of the groups who have been concerned. In recent years there has been a constantly increasing body of facts contributed through the instrumentality of research; and these facts have provided the means of increased insights, which in turn have stimulated greater interest and have served as guides and controls for effective work. Without these findings which have come through research in the past third of a century, we should have witnessed no such progress in the care and provision for handicapped children as we have at present.

By way of illustrating the painstaking and extensive research that has been done in these fields in recent years, reviews of the work on various types of exceptional children have been prepared by a number of writers and are presented later in this bulletin. I shall not therefore go into detail here regarding what we now know by virtue of the research that has been done. It seems profitable rather to give some attention to the things we ought to know. It will not be possible to give separate attention to each of the fields represented by the physically handicapped. I shall therefore treat all of the fields together in the form of a list of aspects or areas which would be involved in a relatively complete understanding of the problems. Such a list may serve to help distribute the attention of those who

1. Director, Bureau of Research, Cincinnati Public Schools.

are contemplating research, over the range problems which exist, and it may help to secure more research in some of the areas where it is most needed.

If we had a complete picture of the problems connected with the physically handicapped, from the standpoint of educators, it would probably include knowledge of some nineteen different areas. In view of the number, we shall do little more than mention these here, with a word or two to make the concepts clear. They will be presented somewhat in the order of their logical contribution to advancing knowledge in the field, though one should not get the impression that research cannot begin on any level until the problems on all earlier levels have been solved.

We may start our list by noting the desirability of having the general field properly delimited and subdivided. This step has been fairly well done at the present time, although it is not finally completed. The border line for handicapped children, and between different types of handicaps, is drawn variously by different workers. A major classification has been made which divides exceptional children into those who are mentally handicapped, those who are physically handicapped, and those who are socially handicapped because of having unacceptable personalities and modes of behavior. The second group, the physically handicapped, are the ones to which we are here devoting attention. They are commonly divided into seven classes—the hard of hearing, the deaf, the partially seeing, the blind, the speech defective, the crippled, and the delicate. This last group is spoken of as a single group simply for convenience; in scientific work and in treatment it requires division. The group comprises the anemic, cardiac, undernourished, post-encephalitic, epileptic, and those suffering from endocrine disorders, and intestinal parasites. Probably these groups should be designated as the *systemically* abnormal.

Having the major subdivisions set up, we are next interested in being able to classify actual cases according to the categories adopted. This problem has two sides—the logical, and the practical. We shall regard them as constituting the second and third areas of knowledge. On the logical side, we have the matter of definition. When does a person come within the scope of a particular category? Is a child to be regarded as crippled when he has all of his limbs, but one or more does not flex readily? When is a child a cardiac case? How bad must his vision be before it is classed as subnormal? Such categorical details are essential for survey purposes, as a basis for organizing knowledge, for administrative procedure, and for treatment in its more general aspects.

On the practical side of classification, we have the matter of identification. In some cases this may be done on the basis of common characteristics, readily observable; in other cases it requires refined measurement. We need measurement also to determine the degree to which a recognized handicap exists. Measurement of the sort here required is almost entirely a product of the twentieth century, and there is much yet to be done. For example, while the audiometer has been found to discover four times as many children with impaired hearing as the teacher unaided did (4), there are still technical defects in its use and there are problems especially in connection with measuring the degree of deafness of the mentally subnormal. In the area of systemic disorders, measurement is very incomplete and is largely of unknown dependability. Since early detection is of major importance in the treatment of a number of defects, a reliable means of convenient measurement, and its systematic use for surveys, are vital needs.

Having these three levels of knowledge, we are ready for the fourth logical step, which is enumeration. How many children are there who fall in each class? How important is each type, in terms of numbers? We do not have a national census of these facts, but we have fair estimates made available in the White House Conference of 1930 (5). From that source we learn the somewhat startling facts that there are probably three million children with impaired hearing, sixty-five thousand who are blind or need conservation of vision classes, one million who have speech defects, three hundred thousand who are crippled; and among the delicate or systemically abnormal children we note approximately one million who have tuberculosis or are suspected of having it; another million who have weak or damaged hearts, and six million who are undernourished for one reason or another. To these must be added one hundred fifty thousand epileptic children, and an unknown number suffering from endocrine disorders and other handicaps. These groups embrace roughly twelve and one-half million children, though there is some duplication for children with more than one defect. We do not need to count the mentally atypical and the socially maladjusted in order to recognize that exceptional children aggregate to an impressively large number. We should, however, like to have the numbers more reliably determined. Having the general field defined, and the quantitative importance of its subdivisions established, we should seek to learn more about the occurrence of the defects. A fifth type of

knowledge would throw light on the distribution of handicaps, and the factors which are external to the handicap but associated with its distribution. That is, we are concerned to know what conditions seem to favor the occurrence of a defect, and what conditions seem unfavorable to it. Such knowledge largely comes from surveys when they consider enough factors. Such factors as age, sex, race, neighborhood, economic level, urban or rural region, etc., may be significant with reference to the incidence of the difficulty. If pronounced associations are discovered, they are to be examined with regard to the possibility of being in part causative, or conducive. Research of this type has been done on a considerable scale, but there is room for still more.

With this knowledge of the distribution of a handicap, we begin the process of building a picture of the general syndrome which ultimately permits a refined diagnosis. We may add another aspect to the picture by a sixth type of knowledge which is concerned with secondary characteristics of the defect. This class of associated conditions embraces results of the defect, or concomitants which are normally indigenous to it, rather than causes.

By way of illustration, we may refer to the question of compensation in abilities; does the blind person have a keener sense of smell, and does the crippled person gain added strength in the good limbs? While the scientific evidence is largely negative on these points, except for the results of training and use, they serve to illustrate the class or real or supposed associated conditions.

Typical or natural case histories constitute a seventh type of knowledge. What happens to a handicap if it is left alone? Do the hard of hearing children improve, or grow continually worse, if they are not given attention? How long does it require for a defect to develop to its maximum degree? How long will it continue to exist? How do its characteristics change from one period to another, and what are its consequences? Such knowledge is of great importance for the practitioner, as well as for the experimentalist. We need case histories both of the natural type, and of the experimental type dealing with those who have received various kinds of special treatment. This area is one of the most important for research work.

With the next level of knowledge, the eighth, we approach close to the heart of scientific insight. This level includes an understanding of the intimate structure and functional details of the defect. We may illustrate with the field of speech: What takes place when one stutters? Is the difficulty in the breathing, in the lips, or elsewhere? What are the emotional aspects? When do they begin? Is one aware in advance that he is going to stutter? With detailed knowledge of the form of operation which is involved in the handicap, one may formulate various classes representing different varieties of the defect, which call perhaps for different treatment.

The ninth level includes a synthesis of several previous ones, and adds a few elements not embraced by them. It is concerned with causes, and represents a systematic understanding of both immediate and antecedent causes. That is, we may say for example, that a crippled child was directly maimed by an accident; but a contributing cause may have been low mentality, impaired hearing or seeing, etc. The direct cause of tuberculosis is the infectious tubercle-bacillus; but there are many contributing, predisposing conditions, some of which may be hereditary. Certain physical movements may be the immediate cause of stuttering, but social conditions usually enter in as contributing factors, and the very act of stuttering may itself be in part a cause of further stuttering. On this level, we utilize any knowledge of conducive factors gained from a study of the distribution of the handicap, correlate this with our knowledge of the operational character of the defect, and seek to arrive at a detailed picture of the nature of the difficulty and its various possible causes.

With these nine types of knowledge, we have a picture of the syndrome of any handicap, and a complete diagnosis has been made possible. We may now turn attention to constructive amelioration. The tenth step will accordingly be a study of prevention. Knowing the causes, both immediate and remote, we attempt to interpose other forces or conditions which will be effective in blocking them. For example, knowing the number of children who are crippled at play each year by different kinds of accidents, we may study means of avoiding these, either through safety education, better physical training, removal of equipment or other conditions that are dangerous, through prohibition, or through providing better conditions elsewhere. Sight-saving work is largely preventative in its efforts, and represents a well developed area of understanding. Research in the field of prevention is of the utmost value.

The eleventh step in a complete understanding of problems of the handicapped is a study of the proper treatment for those handicaps which have already appeared—the ones that have not been, or could not have been, prevented. This area is of large concern to the classroom teacher, and to other practical workers. What kind of care does a particular

handicap call for? How should treatment vary with different degrees of the handicap? With different personalities? When there are additional handicaps present? When, for example, should a cardiac case be taken out of the regular classroom or the general routine of school and put on a restricted program, or under different conditions? We are here concerned primarily with what we might call the proper care from the medical or therapeutic standpoint. While we may look to the medical field for basic information, we should not leave all research in this area to that branch of science. Properly trained research workers in education may well undertake the study of certain of these problems.

As a twelfth type of knowledge we may mention problems of educational methodology, or technique of instruction. These of course include techniques of learning. In the work of instruction we have need for the combined knowledge and artistry of the educator, the doctor, the psychologist, and the sociologist. The problems of general education are largely present, with the problems of special education superimposed. The possibilities for research are enormous, for the possible variations in technique appear to be endless. As an interesting example in this area, we may refer to the use of motion pictures to study the reading of Braille, thus laying a basis for a psychology of learning, with many possibilities for modification of the print as well as of the method of instruction.

A portion of the instructional problems are reserved for a thirteenth classification, which we shall denote as the curriculum. By this we mean the larger aspects of the work in contrast to the techniques, or methods. For example, what are the long-time objectives of the education for each different type of handicap? What are the things one should strive for—in addition to physical rehabilitation insofar as this may be possible? We have here the usual problems of curriculum making, intensified by the presence of special conditions.

We come now to the matter of follow-up service. Assuming that the individual has been properly guided through school, we should give consideration to the question: What are we turning the individual out to face? What will happen to him if we suddenly withdraw all institutional care, and leave him to make his way? How much follow-up service is needed? It is usually recognized that the handicapped have unusual difficulty in the world at large, and special consideration is necessary for their vocational adjustment. As a fourteenth area for study we may therefore list the matter of vocational opportunities and vocational adjustment for people with different handicaps, and different amounts of training. The practice at present is based mostly upon common observations rather than any careful research.

As a fifteenth class of knowledge about the handicapped and their care, we have the whole field of administration. To what extent, and in what manner, are the different types of technical knowledge being made serviceable to the handicapped? This area includes the kind of institutions, the modes of administration, the adequacy of financing, the kind of control, the nature of the laws, etc. The number and proportion of the handicapped who are receiving care in these institutions is also included. While there are a variety of topics included here, we treat them as a single class because the type of knowledge commonly secured about them is a survey or normative type. A large number of studies have been made in this area, but our knowledge is still not complete.

For our sixteenth type of study, we have the matter of appraisal. How adequate are the provisions that are being made? How appropriate or well adapted are they? How well is the work being done day by day? How effective is it? Are the expenditures for special education producing results sufficiently different from a less expensive education to warrant continuance or development of the program? All practice needs constant evaluation, particularly in the light of rapidly advancing standards. Research may be conducted with respect to the means of making appraisals, and with respect to actual work being done.

It was mentioned earlier that our measurement techniques were of recent origin, and are still imperfect. The accuracy and dependability of various forms of measurement, together with the effectiveness of various modes of research, constitute a seventeenth field for study. In other words, research must keep one eye inward upon itself to see that it provides instruments and techniques which are capable of affording an ever more refined body of knowledge.

We should add one more aspect to round out the scientific picture. This is the historical. It gives background and perspective to appraisal. It aids in preventing the repetition of unprofitable experiments. It affords a measure of progress. At the present time we have adequate histories of most of the types of handicaps, but not of the special phases of the fields, such as administration, techniques of research or of treatment, public attitude, etc.

Perhaps these eighteen areas of study are sufficiently inclusive to complete the picture of handicapped children and the work that is being done for them. I have however reserved

for final consideration a topic of especial interest which I believe to be of sufficient importance in the case of the handicapped to warrant treatment as a separate, and nineteenth category. I refer to the matter of psychological orientation, or adjustment. I do not mean those cases of maladjustment which are so marked and so overt as to constitute anti-social behavior. I am thinking primarily of the inner aspects of the adjustments which handicapped individuals make, or fail to make, to the outer world which they face.

We know that many—perhaps the majority—of people who are classed as normal have serious problems of adjustment to some phase of life. But the handicapped have additional problems. In most cases the child must go through life as a marked individual, carrying constantly with him his badge of physical inferiority. He cannot forget entirely his many experiences with people who have avoided him, to associate with others who were more like themselves. He cannot forget entirely his many experiences as a child, with other children who did not hesitate to run away from him—and perhaps make fun of him. And he cannot submerge these experiences in a wealth of dreams and plans, for he knows his dreams cannot come true. He cannot be a leader on the playground, and other children do not run to greet him when he approaches. His life is largely one of looking on, and wishing—without the possibility of hoping.

Where schools are well operated, attempts are made to overcome these tendencies in the psychology of the handicapped. But there has been little research in this field, and that is why I call especial attention to it. We need extensive, and very carefully made, studies of the mental and emotional life of the handicapped; and we need discriminating studies that will reveal the means by which it is possible to make life for the physically handicapped more real, more purposeful, more consequential.

According to the philosophy expressed by the White House Conference, "The handicapped child has a right

> To be brought up and educated by those who understand the nature of the burden he has to bear and who consider it a privilege to help him bear it.
>
> To grow up in a world which does not set him apart, which looks at him, not with scorn or pity or ridicule—but which welcomes him.
>
> To a life on which his handicap casts no shadow, but which is full day by day with those things which make it worth while, with comradeship, love, work, play, laughter, and tears—a life in which these things bring continually increasing growth, richness, release of energies, joy in achievement" (5).

Such is the goal that underlies all of the research and all of the care being given in this field. To the end that it may be more fully realized, the teacher, the administrator, and the research worker, are carrying on.

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(*Continued on Page* 14)

Studies Relating to Blind Children

KATHRYN E. MAXFIELD

DURING the last ten years the research work pertaining to blind children arranges itself under five headings: techniques and materials of instruction, tests, psychological problems, curriculum organization and administration, and miscellaneous. The last three of these must be ignored in this report because of limitations of space, although a few service studies, which are omitted with regret, will be found listed in the bibliography (1), (2), (4), (18).

TECHNIQUES

Arithmetic.—As a first step in her study of arithmetic in schools and classes for the blind, Dr. Frieda Kiefer Merry (10) obtained suggestions, based on their own experience, from blind graduates of these schools. Despite some contradiction in the results, there was agreement on a few points. The use of type slates was favored at least through the fifth grade, but opinions differed as to specific slates. Dr. Merry made comparative studies of type slates, the results of which were interesting, although not enough subjects were available to insure clear-cut results. In the study of the Brannon-Cubarithme and the Taylor slates (11) the pupils achieved greater speed and accuracy on the Cubarithme. Since new type-slates have been invented recently there is room for an extensive investigation of the merits of the various ones now in use.

Reading.—Between 1925 and 1928 Maxfield (8) conducted for the American Foundation for the Blind a series of investigations on braille reading methods for blind beginners. It was found that word-and-phrase methods usually brough better results than did those requiring the children to learn the individual letters and the dot positions before they experienced the general form of larger units. Regarding the mechanics of braille reading it was found that the best readers, even among beginners, use very little pressure on the braille, and are likely to read with both hands rather than with one. Other topics discussed are the relative efficiency of different heights and shapes of braille dots, the best distances between braille lines, and the proper angle of the finger to the braille.

Recently Dr. B. F. Holland (6) has contributed a valuable method for studying the activity of the hands in braille reading. Motion pictures were made of the hands of four pupils during the silent reading of specified material. These records were superimposed, by means of a projecting device, upon the material read so that the positions of the fingers in each exposure could be located and marked upon the line of braille. It was found that the poorer readers took longer to read each line and were less uniform; that good readers covered more material with the right hand; and that good readers spent less time at the end than at the beginning of a line of braille. Because this study lends validity to previous work done by less objective methods, it should be extended to cover a large enough number of readers so that the results can be accepted as final.

One frequently discussed topic relates to the time when contractions should be introduced. No conclusive research has been done on this, but Merry's (12) experiment gave considerable support to the few teachers who were teaching words in contracted form before they gave the corresponding full spelling. Her results indicated greater speed and accuracy for the contraction readers, and apparently the contractions did not have a bad effect upon spelling.

Another problem which needs more experimental attention is that concerning the ability of blind children to recognize embossed pictures. Merry (13) has done valuable work on this subject but her conclusions could not be more than tentative. Further experiments should be undertaken and the results interpreted in terms of such factors as the subject's previous visual experience, the amount of perspective represented in the embossed drawings, and their value to the blind as diagrammatic representations of known objects.

Writing.—Surprisingly little has been done on the mechanics of teaching braille writing. The most important investigation was done by Dr. F. K. Merry (14) on the relative values of the braille slate and the braille writer in teaching beginners. The use of the braille slate requires fine motor-manual coordinations which rarely would be expected of a seeing first grader. Theoretically, therefore, a braille typewriter is the better instrument to use with beginners. However, it is heavy and cumbersome for a six-year-old, and the keys are arranged for adult hands. For this reason Dr. Merry experimented with a small German writer on which the keys were well suited to small fingers. This Minerva braille writer

seemed entirely practicable for teaching beginners. However, since it failed to meet with the approval of mechanical experts, its continued use was not urged.

Apparently the braille writer, even the full-sized one, was better adapted to the needs of children just learning to write than was the braille slate. The slate writers made more braille errors and three times as many transpositions as did the users of the braille typewriters. Contrary to the expectations of the teachers the children showed no objection to braille slates after becoming accustomed to the writers.

Further experiments are desirable on the use of braille appliances, especially since the appearance of the improved writer sold by the American Foundation for the Blind.

Nature Study.—Experimentally speaking, little has been done on the teaching of nature study to blind children. Merry (15) reports one study in which she tested the relative value of two-dimensional and three-dimensional models, including museum specimens. The results indicated a need for introducing nature study in the curriculum as early as possible, showed a superiority for three-dimensional models, and disclosed the need for much care in the selection of animal specimens. Nature study has so much to offer blind children that an extensive research program in this field would be justified.

Music.—Dr. B. F. Holland has under way a study from which he wishes to determine the extent to which the child's progress in learning music is affected by his proficiency in interpreting braille. It is hoped that this study will lead Dr. Holland to a further one on the relative efficiency of the bar-over-bar and the paragraph systems of printing music braille. Considering the importance of music in the educational lives of blind children, the lack of research work on the educational value of the techniques and materials involved is surprising.

Tests

Mental Tests.—The most widely used intelligence test for the blind is the Hayes' (5) adaptation of the Terman Binet test. In 1930 the last revision appeared, but Dr. Hayes is now studying the 2100 and more records which have accumulated during the last six years. Because of the need for interpretation on the part of the examiner in testing the intelligence of physically handicapped children, it is hoped that classroom teachers will refrain from administering such tests themselves unless there is no other way to obtain ratings of the pupils' ability.

In 1931 Miss Ruth Sargent (17) adapted part of the Otis Classification Test so that there might be a group intelligence test for use with the blind. It is not difficult to administer and can be used by the teacher.

At the Institute for Juvenile Research in Chicago, Dr. Andrew W. Brown has devised a scale of intelligence tests chosen on the basis of results obtained with blind, partially-blind, and seeing subjects. Each test has been placed at that point in the scale at which it is passed by the subjects in all three groups. Tentative forms have been obtained and the test is available in mimeographed form.

Educational Tests.—A number of investigators have been impressed by the possibilities of the Stanford Achievement Tests for use with blind children. An adaptation of the Reading Examinations, Forms A and B, (9) was standardized in 1927 and is still available. This was improved upon a few years later (3). Recently, the tests in Forms V and W have been adapted at Perkins Institution for the Blind, and are available for use in other schools. At New York Institute for the Education of the Blind an analytical study of the Stanford Achievement Test is in progress which should be of considerable value.

Recently the American Council Alpha Spanish Test (7) was adapted successfully for use with blind students, although the results must be considered tentative because of the small number of subjects. Also the Seashore Musical Talent Tests (16) have been adapted so successfully that their use can be recommended unqualifiedly.

Conclusions

A review of the research studies published during the last ten years forces upon one's attention the incompleteness of most of the work. Many investigations have been made which are introductory in nature and which still leave the teacher but a small body of verified facts. The Hayes-Binet Intelligence Test and possibly the Otis Classification Test are sufficiently standardized to be of service. One test well-adapted for use with the blind is the Seashore Musical Talent Test. Also the Stanford Achievement Test, as used at Perkins Institution for the Blind, is probably entirely satisfactory.

The work on various phases of the mechanics of braille reading has considerable validity since Maxfield's conclusions gave support to work previously done abroad, and since some of these have been given further support by Holland's recent contribution.

However, much of Dr. Merry's work, so stimulating in the possibilities which it suggests, yet inconclusive in itself, has not been built upon by other investigators. To teachers,

at least to new teachers, there is obvious importance in such problems as the teaching of contractions to beginners, instructing first graders to use the braille writer rather than braille slate, or using embossed pictures and diagrams. Knowing the real answers to such questions as these makes a difference in the amount of time and energy spent by both teachers and pupils, and in actual cost to school systems and institutions. Yet, the comprehensive, long term studies which would be needed have still to be done.

At the high school level there is not so much reason for careful standardization of techniques and tests in the usual school subjects. Here, the greatest need seems to lie in the field of prevocational and vocational courses upon which it has not been possible to touch in this report.

It is to be hoped that someone will be inspired to repeat experimental work already done and to increase its validity by additional experiments. Work is needed on problems which have not yet received attention, but first it seems important to make worthwhile the work already done.

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What Can Research Contribute?

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Research Studies of the Deaf

CLARA E. NEWLEE

RESEARCH studies of the deaf which have been made scientifically, and reported in available form have been comparatively few within the past five years recorded in this report. In fact, there is a great need for more such studies to bring the education of the deaf out of the doldrums of merely carrying on some very brilliant beginnings made within the last 25 to 50 years by a score or more of educators who created and initiated the modern program of educating the deaf to become members of society at large rather than a segregated little-thought-of-group.

The studies which have been made seem to fall under such heads as: general problems of the deaf; deafness, its causes, prevention, and treatment; educational methods and experiments; languages and speech tests and surveys.

This report will attempt to summarize only the most outstanding research studies under the topics listed above.

I. General Problems of the Deaf

The most comprehensive general study of the deaf available in print is to be found in a book by Max A. Goldstein (10), published in 1930. Practically every phase of the problem is presented, including the history of the education of the deaf, anatomy and physiology of organs of speech and hearing, tests of hearing and mentality, classification of deaf pupils, psychology of modern methods of instruction, and a full discussion of problems of the hard of hearing. Statistical data are included on schools for the deaf, and the author finally concludes with the results of some personal research as an otologist as well as an educator of the deaf. The book is truly an important contribution.

Harry Best (1) discloses that education and training place the deaf person in a superior position with reference to economic and social independence, and that education is the most satisfactory solution to the problem of treatment of the deaf for their highest development and welfare.

Pre-School Problem

Age of beginning training of a deaf child has been studied and some data gathered and conclusions reached by Meyer (21), and Miller (22). The trend is toward starting the teaching of language, lipreading, and speech to a deaf child as early as possible. Meyer studied motivation of speech and states that the deaf should associate as much as possible with hearing-speaking children, and advocates that such training be started at three years or earlier, with the objective of preparing the children to enter regular public schools after three or four years of special instruction.

Statistical data, with interpretations concerning schools now offering pre-school training to deaf children, are presented by Miller, showing that an increasing number of schools are recognizing the importance of pre-school training of the deaf child.

The use of the audiometer to train a pre-school deaf child to coordinate sight and touch with whatever residual hearing exists is reported by Guilder and Hopkins (12), with a prognosis that such training may shorten the learning time for language and speech development by utilizing all the senses to their fullest degree.

Industrial training is judged to be the most important and outstanding feature in the educational treatment of the deaf by Paterson (24).

II. Deafness: Causes, Prevention, Inheritance, Treatment

Research on causes, prevention, treatment and inheritance is largely carried on by the medical profession and generally reported in their literature which is not always accessible to the layman.

Of interest to the schools is the report by Shambaugh, (27), Richardson, Hagens, Haldeman, and Watkins, in which causes of deafness are given from examination of 3734 deaf children in 19 schools for the deaf. Heading the list are such diseases as spinal meningitis and scarlet fever, followed by flu and other infectious diseases originating in the nose and throat.

Prevention of deafness was studied by Shambaugh (27) and Love (18). Protecting children from infectious diseases is advocated by both authors, while Love states that definite progress has been made over an observed period of 40 years.

The question as to the marriage of deaf persons and the probability of deaf offspring is raised by Gruver (11). The author advocated the informing of deaf persons as to the in-

heritance probabilities and educating them to proper decisions for the best good of children of such marriages.

III. Educational Methods and Experiments

Belgian Method.—Various means of approach to the teaching of language to a young deaf child have been tried from time to time. The Belgian method, originated in Brussels, is reported by Drouet (8) as successful with children from six to eight years after a period of five years. The underlying principle is objective visual training, accompanied by writing. Pictures and objects are used to present vocabulary. Procedures vary with different teachers but all schools using the method report favorably on it.

Gault Teletactor.—An electrical instrument which is designed to teach through touch and hearing along with lipreading (sight) has been reported by several users—Cloud (4) and Dean (7). The pupils place their fingers on a highly sensitized plate, and interpret the vibrations of the voice and speech. The teletactor pupils are said also to improve their own speech by the imitation of the teacher.

Reading.—The problem of reading for the deaf is complicated by their lack of understanding of the language. Various studies have been made by Thompson (28) and LaGrone (15), as well as of experimental methods. The chief objective is to find an approach that will speed up the learning of word and language meanings. Thompson presented printed forms with pictures and objects, and reported success in quickly building a large reading vocabulary. Hammer and Howes experimented beyond the single word and unrelated sentence to start short charts about some specific experience (13). The pupil responded by increased interest in spontaneous use of language, apparently stimulated by the procedure used. A more advanced plan for the pupils to develop self help and correct language is the "Key to Straight Language", Fitzgerald (9). Grammar is made plain and pupils are taught to be independent in the choice and use of correct language in oral and written expression.

IV. Speech

Teaching speech to the deaf requires a special technique, not perfected, but constantly being improved. Studies of the speech of the deaf have been made with the Stroboscope and the kymograph pneumodak by O'Leary (23), Hudgins (14), and Voelker (29), to compare pitch changes and duration with speech of hearing children. Pitch changes are found to be usual in the speech of the deaf, but such changes are not used to render meaning to the sentence, as with those who hear. The Strobilion to give the speaker a picture of his voice vibrations was experimented with by Meyer (20), and recommendations for its further use were made.

Voice and its proper development and training are the subject of a book for teachers of speech to the deaf, with methods and procedures suggested which are the result of a long successful teaching career—Connery (5).

V. Tests

The standardized intelligence and achievement tests which are commonly administered to school children presuppose understanding of language and reading ability suitable to the age of the pupils. Lack of language and consequent low reading ability prevalent among deaf children complicate the giving of the usual forms of tests to deaf children. Results of testing deaf children by the standards used with hearing children invariably show retardation of the deaf of from 2 to 5 years, in proportion to their language handicap. Non language tests have, however, been applied to the deaf with satisfactory results and are recommended for further use—Peterson (25).

Important conclusions as to the determining factors in educational achievement of deaf children are that not more than 25% of the total retardation can be accounted for by mental retardation, that language acquired before the onset of deafness is the child's most valuable asset, that even a relatively small hearing loss is most pernicious in its effects, and that early discovery and proper school placement are of the utmost importance—Howes (13).

Personality aspects of deaf children were studied, Brunschwig (3), and maladjustments were found more prevalent among the deaf than the hearing—Lyons (19).

Motor abilities of the deaf and hearing children were compared and very little difference noted—Long (17).

VI. Surveys

Surveys have been few in the field of the deaf. Data are scarce for the students of the subject. Surveys listed (2, 6, 26) present statistical data about residential and day schools for the deaf in the United States.

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Studies of the Hard of Hearing Child

J. C. G. LORING

THE facts and number of studies specific to the hard-of-hearing child since 1926 are few in comparison with the great amount reported on the deaf. It should be borne in mind, however, that many studies on the deaf child are applicable to the hard of hearing. The experiments on lip reading by Heider, for example, revealed facts which are just as important for the hard of hearing as for the deaf child. Reference to this and other topics of interest to the teacher of the handicapped should be found in the section relating to the deaf child, reported elsewhere.

The following accounts of the facts relating to the hard of hearing child cannot be considered exhaustive; they represent a selection of studies which may be of interest to the teacher of the handicapped.

A comprehensive article on the hard-of-hearing child was prepared by Norris (13), who gave among other things a list of the recommendations from the White House Conference on Child Health and Protection in 1930. Norris reported that hearing tests in Boston and Chelsea showed "that hearing acuity and health conditions had a bearing on each other." The following paragraph is worth quoting from this article: "It has been found that: (1) more hard-of-hearing children repeat grades than do children with normal hearing; (2) a hard-of-hearing child, can, with the acquisition of lip reading, change from a backward to a bright pupil; (3) the estimated costs are less to give audiometer tests and provide lip reading than to re-educate grade repeaters."

The value of lip reading was shown in 1930 by Waldman and others (17), who found that the difference in achievement (educational) between two groups of hard-of-hearing children in favor of the better speech readers or lip readers was "in all probability due to their superior speech reading ability." They also found that "in the sixth, seventh, and eighth grades it has become so efficient (lip reading ability) as to contribute along with other factors to counteract the cumulative effect of partial deafness on achievement to the extent of making the correlations between hearing and achievement lower in the upper grades than they were in the intermediate grades." The mean "efficient" hearing score for both groups was about 12% loss.

In support of the Waldman study, Hofsommer (5) reported the effects of lip reading in the public schools of Webster Groves, St. Louis County, Mo. After one to three years of lip reading lessons given to hard-of-hearing children 47% showed an increase in their I. Q., 41.1% no change, and 11.7% a decrease. Definite classroom improvements, as measured by the Stanford Achievement Test, were made by 76.4%, and all showed marked betterment in behavior. On the other hand, a group of hard-of-hearing children who refused lip reading lessons during the same period showed no improvement in I. Q.; only 18.7% made any classroom improvement, and all were character problems.

Studies in auditory acuity are perhaps most important. A method is needed to differentiate the response of the auditorily deficient from those of normal hearing, but mentally deficient. A way to test the hearing of very young children has not yet been perfected, but there is an interesting experiment now going on by Stubbs (16), on the response of newborn infants to auditory stimulation. The body activity was measured by the stabilimeter-polygraph technique; changes in respiration and fontanelle pressure were measured by specially constructed pneumograph and tambour devices. Specific responses are recorded by an observational technique and by a motion picture camera. The source of the tones is an audio-oscillator with two stages of amplification. Stubbs' experiment, (the results have not yet been analyzed), was to discover: (1) the nature of infant's responses to auditory stimulation, (2) to measure the amount of overt activity in response to variations in pitch, intensity, and duration, (3) to measure changes in respiration and fontanelle pressure to variations in pitch, intensity, and duration, and (4) to determine whether responses either overt or implicit, may serve as a basis for establishing auditory thresholds in very young infants.

Jervis (6), on the acoustic reception in the second year of life, found that there is no ascending scale of receptivity with increase of age, but rather, high and low points at different times. For children of age range of four and one-half to six and one-half years, the reliability of the 4A audiometer for 57 subjects was .697, PE.05, by the method of chance halves, according to Williams (18). This is quite low for an instrument, but it must be

remembered that this 4A is a filter or detector of poor hearers. Another set of figures obtained by the audiometer is reported by Sterling and Bell (15). They tested 1860 students between the ages of 8 and 17, and in grades 3 to 9. Higher percentages of both normal deficient hearing (9 or more S. U.) were found at the higher ages. There were slightly more marked impairments of hearing among boys than girls.

Speech must often be corrected even when there is slight loss of hearing. It is useful to know, then, that Kerridge (7) has arranged the common speech defects in order of increasing deafness as follows:

1. Monotony of tone,
2. Omission of s, sh, ch, (high frequency components),
3. Unnatural intonation,
4. Poor phrasing and lack of rhythm,
5. Slow speed, and
6. Bad articulation.

For the school status of the hard-of-hearing child we have four selected studies. The first, by Waldman and others (17), was based on children in grades 4 to 8 from two Philadephia Schools; the total number of pupils was 1079. The tests used were the National Intelligence Test (which assumes language ability), the Stanford Achievement, and the 4A audiometer. The correlations between intelligence as tested and the hearing scores were low, practically zero. The correlation between the educational quotient and intelligence was also low. Those with very good hearing have higher I. Q. and E. Q. than those with poor hearing. The poor hearers showed more grade repetition and school retardation. But the most significant result of the study was that "these slightly defective hearers present a condition similar to that found by Pintner to exist with the seriously deafened,—namely, the divergence in achievement between the good and poor hearers is greater than the divergence in intelligence."

Madden (11) confirmed in general the results of Waldman's study: he found a negative relationship between auditory loss and intelligence, but a positive relationship between auditory acuity and intelligence. There was no evidence that the intelligence levels decreased as the hearing loss became greater. According to Madden, "the correlations between auditory loss and achievement with the influence of intelligence partialled out, fluctuate around zero; are positive practically as often as negative; and are never statistically significant."

Sterling and Bell (15), found a higher percentage of both normal and deficient hearing (9 or more S. U.) at the higher ages; the percentage of significant hearing loss was greater in the over-age-for-group, for children doing poorer work, and for those with low I. Q. These facts were obtained from audiometer tests of 1860 pupils between the ages of 8 to 17, and in grades 3 to 9. A more recent study by Harriman (3) reveals the following data: of 485 hard of hearing elementary school children measured by the audiometer,

38% were up to grade,
25% repeated one year,
18% repeated two years,
13% repeated three years,
6% repeated 4 to 6 years.

In a test by the 4A instrument, 641 college students showed "no evident relationship between either high or low acuity and college marks."

The many casual observations and opinions on the personality of the hard-of-hearing are now being subjected to controlled study. Just recently interest has become centered on the hard of hearing child; Madden (11) early made use of the teachers' ratings to see how the hard-of-hearing child differed from his hearing fellow. The ratings, after statistical treatment, showed the following facts: "The teachers of the hard-of-hearing children rate them nearly as attentive and nearly as inattentive as the normal children who differed only with respect to hearing. Likewise, the hard of hearing children obey with the same degree of promptness and they accept their lot in the school situation as others do. These children never were rated as leaders, while one-fifth of the normal group were so rated. Shyness and solitariness were more frequently attributed to the hard of hearing. The groups were indistinguishable in the matters of conduct and discipline."

Elaborate statistical treatment of data, and deductions from them, concerning the personality of the hard-of-hearing seem to be the method used at present. Habbe (2) is a good example of this approach; he used 48 hard-of-hearing boys and their controls; and twenty of the extreme adjustment cases were interviewed. An Autobiographical Form, a new test, was used; it was found that the two groups of hearing, and hard-of-hearing boys, marked the autobiography in the same fashion. The other procedures show that the hard of hearing were more submissive and introvert, and perhaps more inclined to conformity, but in general, "it is concluded that the essential characteristics of the well adjusted hard-of-hearing

adolescent boy are the same as those of *any* well adjusted adolescent boy."

SUMMARY

The facts set forth above show small beginnings in the study of the hard-of-hearing child; continued research along these lines is needed, but particularly new methods must be developed. Some specific projects suggested by the White House Conference, reported by Norris (13), are these:

1. Construction of objective tests of speech and lip reading.
2. Development of adequate hearing test for preschool children.
3. Psychological research on the emotional difficulties likely to arise in the lives of hard-of-hearing children.
4. Adequate tests for the educational and psychological examinations of hard-of-hearing children.

The National Research Council pamphlet (12) gives a long list of specific problems; the medical problems are given by Shambaugh (14).

In conclusion, it is well to point out that for all these studies, especially those on personality, a handicap is a secondary problem. Allen and Pearson (1) stress the fact that the major adjustment is that of the parent's attitude to the handicap; the child's own attitude toward the handicap will depend upon the parent's attitude.

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Research Studies on Crippled Children

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THIS report is concerned in the main with studies that have been made during the past ten years dealing with the various aspects of educational work with crippled children. No attempt has been made to include research from the standpoint of the orthopedic surgeon or the neurologist, since it is evident that these belong in the medical field. This also applies to the closely related field of physiotherapy. Published material only, has been used or unpublished data available in the files of the International Society for Crippled Children.

Comprehensive studies and books.—The Committee on Special Classes, White House Conference on Child Health and Protection (33), reported the findings of the most recent comprehensive study dealing with the various problems pertinent to the care and education of crippled children. Material was gathered from published sources, through questionnaires and correspondence, and from reports of agencies and organizations concerned with the care and education of the crippled child. The nature and extent of the problem presented by crippled children in certain states and local communities were studied and the findings were taken as representative of conditions in the country as a whole. A study was made of legislative provisions and administrative policies of states providing the more comprehensive programs for the education of crippled children. Methods, scope and character, costs, and the results of such work in state and local systems were reported. The study provides a valuable source of information for those interested in this special field.

Two earlier books should be mentioned for those interested in the growth and development of educational work and physical rehabilitation of the crippled child. Reeves (21) in 1914 reported in detail on the care provided for crippled children in hospitals, convalescent homes, and institutions in the United States. At the time of her report there were only four cities making provision for their care in public school classes. Abt (1) ten years later prepared an extensive report for the International Society for Crippled Children dealing with the history of the care of cripples, causes of crippling conditions, legislation, and agencies providing remedial care.

The historical background of the cripple, and the cripple of the present day as a social problem were ably dealt with by the English writer, Watson (24), an authority in the historical field. Two non-technical books on the subject of orthopedics were written by specialists in the field for teachers and nurses. McBride (17) discussed the various orthopedic conditions and their prevention and correction. Boorstein (7) gathered into book form a series of orthopedic lectures which had been given by the author to teachers of crippled children in New York City.

Legislation.—Steiner (22) analyzed the legal provisions that had been made for the education of crippled children in each of the forty-eight states. States defining crippled children used "unable to profit by the regular classes" most frequently. Keesecker (12) gave a digest of laws governing the education of crippled children in twenty-one states. Provisions relating to physical care and treatment were not included in the study. Howett (11) discussed briefly the development of legislation relating to care, education, rehabilitation and employment of cripples in the United States. He concluded that existing legislation established the fact that the problem of the cripple is a state responsibility. Endres (8) interpreted the laws governing the issuance of orders by judges of the children's courts for the physical care and education of physically handicapped children in the state of New York. J. J. Lee (13) analyzed and interpreted the legal provisions relating to special classes for the physically handicapped in Michigan. "Children may be crippled, but unless it can be established that: (a) because of their crippled condition they cannot make normal progress in the regular grades (in relation to their mental ability), (b) they need and require the special services and treatments available only through the special class, or (c) considerations of 'safety' require that they be in the special class, they should be assigned to regular grades." (13:5).

City and state surveys and investigations.—Numerous surveys and studies dealing with organization for work with crippled children and with facilities for their care and education have been reported. In a brief report it is not possible to include more than a few typical studies. Lison (15) in 1928 prepared a report for the Wisconsin Association for the Disabled.

This report described a survey and investigation which set forth the need of legislation providing for special classes and transportation facilities for crippled children, and which resulted in the enactment of such legislation. The Wisconsin State Department of Public Instruction (34) furnished a complete report of existing facilities in the state for the medical care and education of crippled children. The Kansas State Crippled Children's Temporary Commission (29) reported a survey of the number, distribution, and condition of crippled children and physically disabled persons in the state in order to recommend more adequate means to meet their needs. The New Jersey State Crippled Children's Commission (32) reported on the existing facilities and legal provisions for caring for and educating crippled children in New Jersey. Reports of the Michigan Crippled Children Commission (30, 31) gave complete statistical data showing the activities of the Commission from 1927 to 1934 with reference to physical care and hospital schools for crippled children. Upson and Matson (23) reported a study of the facilities available in Michigan for the care, maintenance, and education of crippled children. They concluded that the state had made liberal provisions for remedial treatment, for the education of crippled children except in rural communities, and for vocational training and placement in employment. Custodial care was available for those requiring it. Angove (2) reported however, that a survey in 1936 of 707 crippled custodial cases in Michigan showed that this condition no longer existed. His findings revealed an urgent need of permanent custodial care.

Special schools and classes for crippled children.—Heck (10) in 1930, through data obtained from questionnaires and reports, made a general survey of the types of educational opportunities being provided for crippled children in twenty-seven cities which had organized special schools and classes for crippled children. He reported on the housing facilities, training of teachers, physical care, equipment, costs, and instructional programs. Lommen (16) prepared a bulletin dealing with the organization of the facilities necessary for special classes for crippled children. Special teaching methods, qualifications of teachers, home teaching, and physical care were considered. Yardley (27) reported on the fundamental requirements of special school buildings for crippled children. Hadley (9) in 1927 presented a detailed report of the Ohio plan for educating crippled children in classes which were subsidized by the state and subject to state regulation. Woolfenden (26) reported the development of special classes for crippled children in Detroit over a period of 25 years.

Psychological studies.—Arlitt and Fernald (3) reported a psychological study of 194 crippled children enrolled in the Cincinnati School for Crippled Children. Admittedly this was not a representative group, the two most important selective factors being extreme severity of handicap and low economic status of family. The intelligence level of the group as a whole was found to be somewhat below the average of an unselected group of children. The investigators stated that these results cannot be held as significant because of the small number of cases studied. Another survey of the intelligence of crippled children was made by M. V. Lee (14), of a group of 148 children who were patients of Children's Orthopedic Hospital of Seattle. It was found that the intelligence level in this group was appreciably below that of an unselected group of physically normal children. This investigator also admits too limited a number of cases on which to base conclusions, but finds that the results compare very favorably with those reported by Arlitt and Fernald. The White House Conference Committee on Special Classes (33) reported a survey of the mental status of 1919 crippled children enrolled in the special schools of Chicago, Detroit, St. Louis, Cleveland, Toledo, and Columbus. This study indicated the need of educational opportunity and vocational guidance and training for crippled children on the various mental levels and stressed the need for special training and experimental work in the group classified as dull and border line. Witty and Smith (25) reported on the mental status of 1480 crippled children. They stated that the mental ability of these crippled children was studied by the use of standard tests. They found the range of intelligence quotients to be from 50 to 134 with a mean of 84.5. Berry (6) made a survey of the status of the subnormal crippled child based on questionnaires sent to 90 cities, 65 state institutions for the feeble minded, and to the 48 state departments of education. He stressed the importance of discovering the subnormal cripple as early as possible, and recommended that the major disability—the mental handicap—be given first consideration in determining what disposition shall be made of this type of crippled child.

Constructive aids for teachers and parents of crippled children.—McLeod (18) reported a study of various plans for providing special educational opportunities for crippled children in rural communities: transportation to near-

by classes in small towns, establishment of residential or day schools in districts or on a county-wide basis, provision for boarding homes and attendance in special classes in nearby cities. If none of the above plans prove feasible, measures were recommended whereby the teacher of the regular or rural school could do much for the welfare and comfort of these children in addition to providing educational advantages. Berry (5) stated that 90% of the handicapped children are in the care of teachers of regular classes. He recommended that, instead of assuming that all handicapped children must be cared for in special schools and special classes, the attention of those interested in the exceptional child be directed to making more adequate provision for his education in the regular grades taught by regular teachers. He prepared a brief bulletin (4), of value not only to the regular teacher for whom it was intended, but for all teachers of handicapped children. In it he set up certain fundamental principles to be observed, followed by general and specific suggestions for putting them into practice. Martens (19) prepared a guide for parents in meeting the needs of physically, mentally, and socially handicapped children. Many of the problems which parents of handicapped children are facing were analyzed and practical suggestions offered for dealing with them. Questions for discussion and reading references were given. Martens (20) reported a conference called by the United States Office of Education. The conference dealt with all types of exceptional children and the entire report should be of value to those concerned with any type of exceptional child. The report dealing specifically with the crippled child presented the educational status of this type of handicapped child in each of the states. It stated that even in the group where the best programs of education for crippled children were in operation, facilities were not adequate to meet the need. Suggestions and recommendations were made as to the means through which the United States Office of Education might be of help to the cause of exceptional children.

Summary.—The past ten years have been a period of growth and expansion in all phases of work with crippled children. Statistics from the United States Office of Education show a 140% increase in the number of cities providing educational advantages through the public school systems during the five year period 1924-29 (28:15). Consequently, research in this field has dealt in the main with determining the nature and extent of the problem of the crippled child, and with the organizations and development of facilities for care and education. There seems to be a dearth of material dealing with mental and emotional characteristics of crippled children. Periodicals and proceedings of the various organizations publish numerous reports of investigations and observations which are of great interest. However, there are few really scientific studies reported, probably due to the fact that sufficient numbers of children are not often available for experiment. Where numbers are adequate, as in a school or institution for crippled children, it is recognized that so many selective factors are operating as to make conclusions unreliable. Little has been done, also, in the evaluation of teaching methods and instructional programs. It is felt that there is a need for more intensive research along these and many other lines. Following are general suggestions:

1. Further research relative to ways and means for caring for crippled children in rural communities.
2. Research relative to the advisability of establishing nursery schools in special schools for crippled children.
3. Research relative to the segregation of cases of cerebral palsy in special schools for crippled children.
4. Continued studies and experiments with the spastic child in planning a more effective school program and establishing methods of measuring progress.
5. Further research relative to vocational counseling programs.
6. Follow-up studies for the purpose of evaluating results and determining the type of education best suited to handicapped children.
7. Further research for determining those occupations in which the physically handicapped can carry on and which are open to them.
8. Follow-up studies of employed cripples, who were educated in schools for crippled children, for the purpose of evaluating vocational counseling and placement.

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Research on Children with Low Vitality

LOUISE STRACHAN

At the outset I wish to challenge the classification of children with low vitality as a "type." In most instances the condition of low vitality is, or should be, only temporary, and is due to a variety of causes. Protective care is needed by all children at some time or other in their school life, and it is both unnecessary and unwise to label certain children as of "low vitality," thereby setting them apart from their fellows as exceptional or different, which they are not, except for the time being. In so doing, a feeling of permanency regarding their physical status is created, and this is to be deplored.

The large majority of children who have been classified as of "low vitality" have been described as suffering from anaemic, pre-tuberculosis, or cardiac difficulties (15). Researches in the fields of tuberculosis and nutrition have shown that there is no justification in the use of the term "pre-tuberculous," for no such condition has been found to exist. Tuberculosis is an infectious, communicable disease, caused by a germ, the tubercle bacillus. A child is no more "pre-tuberculous" than he is "pre" measles, whooping cough, or any other contagious disease. A statistical study (24) made by McKinlay and Watt of Dundee school records indicates that the "debilitated" child is just as likely,—no more, no less,—to develop tuberculosis as the robust or normal child. The clinical studies of Hetherington (12) in Philadelphia and of Chadwick and Zacks (6) in Massachusetts have shown conclusively that the incidence of malnourishment in school children has no relation to the presence of tuberculous infection, or vice versa. In California, Pryor (18) has shown through anthropometric studies of tuberculous children that though the children studied were consistently below the control group in weight, their relative nutrition was just as good.

Furthermore, these studies of tuberculosis in school children have revealed the presence of tuberculous infection in apparently well and healthy children, and have shown that the incidence of pulmonary tuberculosis among high school students is six times as great as it is among pupils in the elementary grades (14).

The use of height-weight tables in discovering children of low vitality has been completely discredited. Underweight is not a diagnosis of malnutrition, nor are all malnourished children underweight (21, 9). Turner states tersely that "it is unscientific and unfair to set average weight as a goal for all children," (22). Also, underweight has been proved to have little if any significance in relation to tuberculosis. The Massachusetts studies (6) showed one-third of the cases of pulmonary tuberculosis to be in children who were not underweight, and twenty per cent of the cases found in the contact group were in normal and overweight children. It is clear that the only sure way to discover the tuberculous child is by the tuberculin test and the X-raying of all positive reactors.* The ordinary physical examination is likewise insufficient to discover latent tuberculosis (12).

Regarding the prevalence of tuberculosis in school children, the Massachusetts studies (25) have indicated that one in every thousand children of school age has the adult type of tuberculosis. In girls the disease progresses more rapidly than in boys of the same age group. Two-thirds of these children come from families with a tuberculosis morbidity of forty-one per cent and a case mortality of forty-nine per cent. Obviously, contact with open tuberculosis is the chief factor in the development of this disease in children.

The trend of infection is downward. When Von Pirquet started his skin tests with tuberculin among the poorer classes in Vienna in 1909, over ninety per cent of children were infected by the fourteenth year (14). The Massachusetts studies indicate that in 1933 about thirty-five per cent of the child population up to fourteen years in that state were infected (14). The Minnesota studies show a similar trend (16). It is also important to note the wide variability in percentages of positive tuberculin reactors in schools located in adjacent districts. A search into the cause of this reveals the presence of a hitherto unknown source of infection (17).

Children with cardiac trouble come under the "low vitality" classification. The American Heart Association estimates that in a school of 1500 pupils the number of children with organic heart disease would not exceed

* In the light of researches now going on it may be necessary to reverse the order of test and X-ray here given.

eighteen and would probably be as low as nine or ten (2). But it is estimated that seventy-five per cent of all cases of heart disease develop in children under ten years of age (7). Obviously it is important that these cases be discovered in their beginning stages. The detection of heart disease requires a careful physical examination which cannot be given without the removal of clothing. Legal restrictions in many localities regarding the removal of clothing handicap the medical school officer in giving an adequate examination. Furthermore, the detection of organic heart disease is only the first step. For intelligent supervision it is necessary that these children be grouped according to the degree of limitation of their physical capacity. From time to time the children need to be re-classified according as their condition improves or grows worse. The American Heart Association has adopted a non-technical classification defining the physical ability of the patient as modified by the condition of his heart (3). Yet in a study (13) of present day school practices relative to cardiac defects in children, King found that out of sixty-five cities answering his questionnaire, only fifteen used the American Heart Association's classification of cardiac defects. The study also showed a great variation in the amount of attention given such pupils, and in the methods used.

In a study of the effect of school and industry on young people with heart disease (5) Brown showed that most children who have organic heart disease, with satisfactory functional ability, are able to meet the requirements of the schools both as to curricula and physical activities, and that they lose comparatively little time from school because of illnesses related to heart disease. The conclusion is reached that such children do not need to be in segregated classes. Bainton observed (2): "Aside from heart disease these children present the same problems in general health as do other children. But in their case it is probably more important that a special effort be made to build up the natural resistance to infection, with the hope of preventing further damage to the heart already diseased."

That heart disease is an important handicap to adolescent children is indicated by the study (10) made of children examined for working certificates in New York City from October, 1930, to December, 1932. Among the total of 166,152 examined, forty-two were permanently refused certificates for several causes other than heart disease, and nine hundred thirty were refused for organic heart disease.

Nutrition has been a fruitful field of research. Studies of underweight children (19) indicate that there is slight difference in their bodily processes and body composition from that of normal children. The chief difference is their insufficient intake of food to meet bodily needs. This in most cases can be corrected and normal body status restored by a consistently adequate diet equal or in excess of that of a normal child. That there is a definite relationship between malnutrition, nervousness, and fatigue has been shown by the Schams (20). Feeding and rest for such children bring about rapid improvement in nutrition. In a study of underweight children in Kentucky (1), those children who practiced habits of rest and not of diet gained more than those who practiced habits of diet and not of rest.

Milk is still indicated as the most productive single dietary item for improvement in nutrition and growth of children, but other foods have also been proved as important contributors along these lines. In a series of California studies (19) Morgan and her coworkers found that the addition of almost any supplement to the diets of underweight school children—milk, figs, oranges, wheatgerm, or even mere calories in the form of a sweet sandwich—resulted in accelerated growth. The type of supplement that produced the best gains varied with the community and depended upon the deficiencies in the home diets.

Summary—It is evident that researches in the fields of tuberculosis, heart disease, and nutrition have made available much valuable information regarding the problems concerned with children of low vitality. Yet out-of-date methods for the selection of these children are still in use. A 1932 publication designed for the guidance of teachers of exceptional children (4) states that "children of lowered vitality are usually detected by means of periodic medical examinations and monthly weighing of all school children." Bibliographies on the delicate child are weak in reference material concerned with research in tuberculosis and heart disease. Also no references appear to be made to the newer methods for the care of children of low vitality in use in Boston, Mass. (23), and in Oakland and Claremont, California (8, 11).

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Studies of Miscellaneous Physical Conditions

Left-Handedness, Endocrine Disorders, Post-Encephalitis, Epilepsy

LOUIS E. KRUMHOLZ

MOST of the research in the field of endocrine disorders, encephalitis, and epilepsy has been purely medical. Very little special education has been provided these groups. As a result, most of the reports of research deal with characteristics and very little with methods of teaching and educational plans.

Left-Handedness

CHARACTERISTICS

Number and sex distribution.—Wile (7:68) estimated that 1 to 30 per cent of the population is left-handed, the difference being due to different methods of determining handedness. Woody and Phillips (8:651), investigating 136 pairs of right and left-handers, and Pyle and Drouin (4:255), investigating 862 cases, found a similar proportion of sex distribution among left-handed writers in elementary schools—boys 62 per cent and girls 38 per cent. Heafner (2:12) found a slightly larger number of boys than girls in his group of 68 pairs of right- and left-handed pupils.

Mental.—Fitt and O'Halloran (1:287) reported that their data, based on 2352 cases, indicate an association of left-handedness with rather low intelligence. Pyle and Drouin (4:255) found that their 862 cases indicated a slightly lower average intelligence than the entire school population (13,438 pupils) investigated. Haefner (2:28) found no reliable difference in I. Q. between his 68 pairs. Scheidemann (5:515) reported that "none of the ten left-handers manifest psychopathic tendencies, although four are described by their teacher as being very nervous and often show signs of emotional instability."

Educational.—Woody and Phillips (8:662) reported that "handedness per se, with the two groups under consideration, had little or no influence on the type of reading responses made." Fitt and O'Halloran (1:290, 295) reported that the percentage of left-handedness decreases stage by stage from the primary school to the university—7.8 per cent in primary school, 5.6 per cent in secondary school, and 4.0 per cent in university, and concluded that left-handedness is associated with relatively low scholastic ability. Haefner (2:32) found no reliable difference in school achievement between his two groups but that there was a suggestion of more variability in the left-handed group. Pyle and Drouin (4:255-6) reported that the left-handed child is under a considerable handicap in learning to read, write, and spell and shows poor achievement in school studies in the lower grades.

METHODS OF TEACHING A REVERSAL OF WRITING

Scheidemann and Colyer (6:196) stated that the particular methods employed were different for each child; some needed only an explanation and enthusiasm with their first attempts, while others required more encouragement, frequent reminding, and the general procedures used with beginning writers. Lauterbach (3:400) reported these methods, used on 940 cases (average age 20.8 years): "The requirement of right-hand writing by the teacher, persistent changing of pencil and other tools (spoon, etc.) to the right hand, persuasion, explanation, and encouragement, are combined often with outright punishment (tying or covering the left hand, slapping or whipping, keeping after school, etc.)." He (p. 461) found that group instruction stimulated interest and competition and facilitated transfer. He (p. 461-2) stated that transfer can be undertaken to the advantage of the child, with a reasonable expectation of success if the Handedness Index (degree of true left-handedness) is not too low, the child is self-confident and aggressive, and coercive methods are avoided. Lauterbach (p. 456) reported that attempted transfer of writing does not spoil the penmanship but rather improves it, even if transfer is not permanent. Scheidemann and Colyer (6:195) reported rapid and successful transfer in their 10 cases. The effect of attempted transfer of writing on speech is reserved for the section on speech.

SUMMARY AND SUGGESTED RESEARCH

Approximately 6 per cent of the elementary school population is left-handed in writing, with a greater proportion of boys than of girls. The left-handed pupil seems to be slightly lower in intelligence and poorer in scholastic achievement. Conflicting evidence of reading difficulties associated with left-handedness is reported. The methods used in attempting transfer of writing are adapted

to suit the individual child, consisting largely of explanation and encouragement, persistent practice, and close supervision. The use of coercion and punishment is discouraged. A careful study of each child's handedness and emotional makeup is recommended before a transfer is attempted. Transfer of writing can be effected easily and quickly, with an improvement in the quality of the handwriting.

The research suggested by these investigations is to include more children of elementary school age in an experiment involving reversing the hand writing and to compare the group versus the individual method of teaching.

Endocrine Disorders

Characteristics

Physical.—Rowe (15:60, 61) examined 5000 cases (largely adults) referred to a hospital clinic and Marinus (12:12) 1,842 cases (school children) in his Glandular Clinic. They reported that, with definite exceptions, such as fatigability, overgrowth or undergrowth, obesity, and disorders of dentition, the physical characteristics and the complaints of the patient afford no reliable basis in diagnosing endocrine diseases. Many endocrine cases may appear perfectly normal in their physical development whereas many non-endocrine cases simulate the endocrine disorders.

Mental.—Gordon and Kuskin (9:561) found, in their review of 10,000 cases which had been studied for a relationship of endocrine disorder to mental retardation, a range of from 2.4 to 82 per cent. They found that 40 per cent of 666 mentally retarded children showed signs of endocrine disorder while Kimball and Marinus (11:571) found 17 per cent among 3,548 mentally subnormal children in special classes. Rowe (15:41) found 3 per cent mental retardation in his endocrine group. He (p. 48) summarized his findings thus: "Experience would seem to warrant the conclusion that endocrine malfunction may play a relatively larger role in mental than in physical retardation."

Personality.—Considerable literature of a popular kind has, no doubt, tended to magnify the role of the endocrine glands in determining character or personality. Much of it can probably be regarded as pure speculation. Rowe (p. 111) concluded that "personality change is not competent to establish or even suggest a diagnosis." He frankly conceded that the personality traits usually associated with the glandular types is the most subjective kind of evidence. He (pp. 110-111) and Marinus (12:12-13) associated these personality traits with certain types of endocrine disorders—sluggish, sullen, ill-natured, negativistic, tensely nervous, irritable, apprehensive, egocentric, voluble, emotionally infantile, and poorly coordinated in motor control. Some are behavior problems, while others are tractable and cooperatively inclined.

Rowe and Pollock (16:663) found 8.1 per cent of 2,308 endocrine cases with a psychosis or psychoneurosis. Rowe (15:107) concluded, however, that "a causal endocrine influence (for mental disorders) would be difficult to establish but an endocrine association equally may not be denied."

Methods of Teaching and Educational Plans

No reports of research along these lines were found. In the Detroit school system there is a Glandular Clinic, but the schools there function largely in the referral of cases and the reporting of school progress of those under treatment.

Summary and Suggested Research

There are some physical, mental, and personality characteristics associated with endocrine disorders, but an appreciable number of non-endocrine cases may exhibit the same symptoms, and some endocrine cases show no symptoms apparent to the lay observer. The discrepancies in some of the findings, particularly the relationship between endocrine disorders and mental retardation, may be due largely to the lack of a comparable basis in the selection or source of the cases. The need for objective tests of personality is very evident in attempting to associate personality changes with glandular disturbances. Apparently, there is no need for any special educational methods or plans in the teaching of these children.

Since glandular therapy is now well established, the question which is probably of greatest interest and in need of further careful research is: Does glandular therapy effect any change or improvement in the intelligence and behavior of the patient?

Post-Encephalitis

Characteristics

Physical.—Bond and Appel (17:67) reported that about two-thirds of those surviving the acute stage of encephalitis develop a neurological condition or personality change, either immediately or often after a free interval. The neurological change results in a general

muscular rigidity and the gradual development of a stiff, expressionless face.

Mental.—Hallowell (21:181) and Bond and Appel (17:7) reported no intellectual deterioration, except in the very young. Their restlessness, however, may interfere with attention and the development of interests. Parsons (22:77) cited the conclusion of British investigators that the average intelligence is lowered and that there is intellectual deterioration due to arrested development.

Personality.—Hallowell (21:168) reported, in studying twenty-four cases (ages 2-19 years) that "following the acute period, appear sometimes suddenly, nocturnal restlessness, hysterical tendencies, epileptoid attacks, over-activity, impulsiveness, over-affectionateness, obscenity, and general incorrigibility. In other cases, there are no behavior abnormalities resulting. The decided change frequently noted in reaction patterns is a rather unique phenomenon. From well-behaved, acceptable children to those whom the regular school class excludes and the parents are helpless to control, is not an uncommon story."

Methods of Teaching and Educational Plans

All investigators emphasized the need of some special type of education for the serious behavior problems among post-encephalitics.

Bond and Appel (17) described in detail the organization and operation of the Franklin School for post-encephalitics. Bond and Smith (18:39) reported, after a ten-year (1924-34) review of the Franklin School, which admitted 85 cases, that on the basis of returns it was not obvious what kind of regime or treatment produced the best results. Cole (19:1022) stated that "where the patient cannot be sent to a special institution, social treatment consists of educational work with parents, teachers, and other adults involved to aid in his convalescence and to protect the mental health of the other members of the family."

Summary and Suggested Research

The post-encephalitic child is frequently one who shows a marked change of personality from what was formerly a well-behaved individual. His serious and perplexing behavior makes him intolerable in a regular school, unbearable at home, and a social "delinquent" in the community. Efforts to handle him through customary means have generally been unsuccessful and some special type of treatment is necessary for the most serious behavior problems. A few special schools or colonies have been organized, usually in conjunction with a mental hospital, such as at the Pennsylvania State Hospital; King's Park Hospital, New York; and Allentown State Hospital, Allentown, Pennsylvania. An improvement in behavior while in the special school is generally noted, but the permanency thereof still remains to be proved since most of the cases studied are young.

Further research suggested is a program of intensive educational work with patient, parents, and teachers immediately following the acute stage of encephalitis to determine the value of preventive measures.

Epilepsy

Characteristics

Physical.—Anderson (24:443) described the most constant symptoms in grand mal epilepsy as being loss of consciousness, dilation of the pupils, spasm of the muscles, and stupor or sleep after the convulsive movements have ceased. In petit mal epilepsy, he stated, there is a very transitory loss of consciousness, without any other symptoms. Muskens (30:270) stated that all authors agree in describing the fourteenth to the twentieth years as being the period at which most cases begin and (p. 232) that "early youth and pregnancy, puberty, menstrual period, and the climacteric are all periods of enhanced tendency towards epilepsy."

Mental.—Muskens (p. 310) found "a very great degree of variation (in mental effect) which is very difficult to explain. Some patients show marked mental deterioration after a few fits, while others suffer from the malady for years, and are practically unaffected mentally. Mental deterioration seems to follow more readily when there is a family history of mental disease." Fetterman and Barnes (26:799) found, in 46 cases of chronic epilepsy of long standing, a range in I. Q. of 33-133, with an average I. Q. of 74. They cited the findings of two British investigators which showed a slightly lower and higher average I. Q. They (p. 799) found, in three or more retests of twenty-five of their cases, a great fluctuation from one test to another, but, in the majority, there was no trend toward deterioration in I. Q. rating. They reported that Dawson and Conn found a definite lowering of I. Q. in the second test, from an average of 82 to 66.5. Fetterman and Barnes (p. 801) also found no direct connection between the I. Q. rating and the type, severity, or duration of the disease in the cases studied. Fox (27:547) reported, in a study of 351 children who attended a school for epileptics

in England, that, generally speaking, there is a fairly close, but by no means uniform, relation between the number of fits and mental retardation. Harriman (28:417), using the Kohs Ethical Discrimination Test, reported that "there is a strong intimation that grand mal epilepsy impairs the moral judgment to a large degree, that epileptics have little ability in abstract reasoning, and tests of common sense elicit grossly inadequate responses." Muskens (p. 321) advised that "before testing or judging the mentality of a patient, one must get him into a comparatively normal condition; that is, the fits must be arrested at least a couple of weeks."

Personality.—There is considerable dispute as to the correctness of assigning a distinct or typical personality to the epileptic. The epileptic has generally been described as being morose, irritable, suspicious, hypochondriacal, unreliable, religious, and egocentric. Muskens (p. 337) and Notkin (31:803) denied that there is a definite epileptic type of personality which is fundamentally characteristic of the disease. They agreed that where there is an early onset (before the age of 12 years) and a persistence of the fits, the personality is likely to change and assume the so-called epileptic character. Notkin (p. 802) found in a study of 150 adult cases in a state hospital, that the largest group, 37.3 per cent, retained a normal type of personality. Paskind (32:385) found, in studying 304 private patients (adults with epilepsy for six years or more), that only twenty, or 6.5 per cent, had "deteriorated mentally", i. e., were unable to carry on in their occupation the same as their fellow-men.

Methods of Teaching and Educational Plans

Reports of research in this field are few. Kimball and Gudakunst (29) made a preliminary report of their study of epilepsy in Detroit but details as to educational methods and results are not reported. In 1935 they organized a residence school for boys and girls (106 enrolled in October, 1936) which combines medical treatment with an educational program. The unique feature, perhaps, is that each school term the boys and girls alternate in residing at the school continuously from Monday morning to Friday evening, one nurse in attendance the full twenty-four hours.

Summary and Suggested Research

In the great majority of cases, the onset of epilepsy is between the ages of fourteen and twenty years. There is a very great degree of unexplainable variation in the mental effect of epilepsy, some cases suffering severe loss of intelligence while others apparently are unaffected. Some epileptics have a high level of intelligence, but in the groups investigated, the average intelligence was considerably below normal—about borderline feebleminded-ness. The evidence is conflicting as to whether there is a progressive decline in intelligence. The existence of a definite personality or character type resulting from the disease is subject to dispute. In the majority of cases, particularly where the age of onset is early (before the age of twelve years) and there is a persistence of the fits, a change in personality results. Very little in the way of education is being done for the epileptic child of school age. Most of them are excluded or withdrawn from school. It is frequently suggested that some special type of education is necessary.

Further research suggested is investigation of the mental effect of epilepsy when based upon the intelligence level before the onset of the disease. More children of school age should be investigated rather than institutional adults.

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Research Needs in Speech Pathology

WENDELL JOHNSON

In general it may be said that there are two types of research involved in the study of any human affliction: diagnostic and remedial. Actually, of course, if diagnostic research could be made to reveal clearly all key phenomena in their inter-relationships, remedial procedures would be automatically indicated, and there would be little need for extensive remedial research. And when important diagnostic data are lacking, remedial research is usually little more than a "shot in the dark". Until adequate diagnostic principles are achieved, therefore, we remain concerned chiefly with diagnostic investigations—and for the most part adequate diagnostic principles have not been achieved to date in the field of speech pathology and speech correction. Consequently, this report will be devoted not so much to a statement of what we have already discovered as to a statement of research needs in speech pathology.

Research needs in speech pathology center around the need for investigation of more highly differentiated phenomena, and of their inter-relationships in terms of spatial and temporal order. I shall elaborate this statement mainly with reference to stuttering and disorders of articulation, with only brief mention of certain other problems.

Research Needs: Stuttering

Probably no more important study of stuttering could be made at this time than a thorough investigation of the "onset of stuttering". The words are put in quotation marks because it now appears doubtful that the "onset of stuttering" in a given case can be referred to meaningfully until more knowledge has been accumulated. This is highly important, since practically any statement about the etiology of stuttering depends for validity upon there being adequate criteria of the onset of the disorder. What we do know would indicate that a study of the "onset" would involve a detailed *relational* description of the speech of very young children (ages 2 to 6 years), with particular reference to the phenomena related to sound and word repetition. At present, the tendency of many writers to identify such repetition with "stuttering", either explicitly or implicitly (as in the designation of repetition as a primary "symptom of stuttering"), is very confusing. It appears that the clinical significance of repetition varies with the environmental conditions under which it occurs, the evaluation placed upon it by the individual, and with the other behaviorial phenomena associated with it. More light on these matters appears essential to the development of a relatively satisfactory theory of stuttering and effective clinical procedure.

Important knowledge might also be gained from detailed investigations of the spatial and temporal order in which so-called stuttering phenomena occur. Studies such as those by Henrikson[1] and Strother[2] are generally representative of this type of research. Technical difficulties arise, of course, when the attempt is made to study several phenomena at the same time, but such difficulties are not so imposing when the problems are formulated in terms of the mere order of occurrence, rather than in terms of the intensity or patterning of the various phenomena. Studies of the order of occurrence of stuttering phenomena should reveal important relations now unknown or obscurely understood. They should serve, above all, to assist in eliminating a most prominent source of confusion and misstatement: the dichotomy of "physical" and "mental", the "physiology" and the "phychology" of stuttering. Probably nothing else has done more to impede progress in this field than the persistence of these anachronistic verbal splittings.

Preliminary investigations of the influence of stuttering on the personality—i. e., upon the

• Previous publications dealing with speech and voice disorders are too numerous to be listed in this brief report. In the "Journal of Speech Disorders", issues of March, July, and September, 1936, there is to be found a bibliography of several hundred references; additional installments of this bibliography will appear in forthcoming issues of the same Journal. Studies in speech pathology are currently published in a wide variety of journals; of particular interest to the student in this field are the above mentioned journal, the "Archives of Speech", the "Proceedings of the American Speech Correction Association", the "Quarterly Journal of Speech", "Speech Monographs", and the "Psychological Abstracts", a bibliographical publication of the American Psychological Association. A comprehensive classification of disorders of speech is that of S. M. Stinchfield (Hawk) and S. D. Robbins. "A Dictionary of Terms Dealing with Disorders of Speech". Boston: Expression Company, 1931.

[1]Henrikson, E. H. "Simultaneously Recorded Breathing and Vocal Disturbances of Stutterers." Archives of Speech, I (1936), 133-149.

[2]Strother, C. "A Study of the Extent of Dyssynergia Occurring During the Stuttering Spasm." Psychological Monographs, 1937, Vol. 49, 108-127.

attitudes and adaptations of the stutterer[3] led to later studies which revealed that many of the reactions to stuttering were, in fact, what had previously been termed "symptoms of stuttering". It now appears important that this type of research be carried further, with the aim of arriving at an adequate evaluation of stuttering considered, not as a response, but as a stimulus, it being understood that these two terms imply two different points of view rather than two different sets of phenomena. Such research would amount to the study of stuttering considered as a semantic reaction—i. e., a reaction in which meanings are involved. By means of this type of investigation the apparently important relations now very vagely indicated by such a term as "attitude" should be considerably clarified.

RESEARCH NEEDS: DISORDERS OF ARTICULATION

Articulatory disorders are at present divided into functional and organic types, and research issues, theories, and therapy are influenced profoundly by this dichotomy. There is a need for re-examination of this scheme of classification, and this involves the whole question of criteria of the "normal" with respect to speech function and anatomical structure.

For example, the therapeutical techniques known as the stimulus method (the speech defective attempts to reproduce the sound pattern as given repeatedly by the instructor) and the method of negative practice (highly voluntary reproduction by the defective of his own errors in articulation) imply the assumption that in cases with whom these techniques are used there is normal structure, in the sense that normal articulation is assumed to be possible without surgery, muscular exercise, or even drill in specific muscular movements and placements. Now, the structural or organic peculiarities which preclude the use of these techniques, *in actual practice*, appear to vary from clinician to clinician. In the whole field of speech pathology there is hardly a more promising possibility for *remedial* research (with important diagnostic implications) than is seen in this connection. This type of research would involve the equating of defectives as to type, and the use of different remedial techniques involving different assumptions with respect to the relation of speech performance to anatomical structure. Such research should make possible a more precise, and diagnostically useful, definition of "normal structure" by indicating the structural limits within which normal articulation is possible.

Another means of gaining knowledge of more highly differentiated structure-function relations is suggested by the study of Faunce[4], who attempted to apply definite measurements to the problems of the relation of size and shape of the tongue to specific articulation errors. Fymbo's[5] study of the relation of malocclusion of the teeth to articulatory defects also indicates that such research might be very fruitful.

It is to be suggested, too, that evaluative work should be done with regard to the assumptions underlying the common classification of articulatory defects in terms of sounds. A type of observation that has undoubtedly been made repeatedly by numerous workers will illustrate this point. The writer knows a child who says "guck" for "duck" and "doose" for "goose". In terms of sound substitution he presents quite a bewildering problem. As a matter of fact, the traditional classification of articulatory disorders in terms of sounds, together with remedial techniques based upon that classification, might be seriously questioned. There is a certain air of incredibility about this statement until we note some of the currently held assumptions based on the "sound" concept. Some of these specific assumptions are obviously open to question. For example, it is commonly taken for granted that it is quite useless to attempt to teach a person to say a word containing a given sound until the person is able to produce that sound in isolation. Or again, the "labial sounds" are so termed as to imply that they are produced by means of the lips, and the clinical assumption is that one must be taught how to manipulate the lips in order to produce these sounds. Also, it seems to be commonly held that the various sound defects, such as the s-lisp, are consistent and involve, therefore, an inability or consistent failure to produce correctly the affected sound, in spite of the fact that a given sound is not always, perhaps not usually, produced incorrectly in all positions—initial, medial or final—nor incorrectly in all words in a given position. Many other assumptions, equally questionable, will occur to the reader. It is not as incredible, therefore, as it may seem at first thought that remedial assumptions and practices based on the "sound" concept might be more or less in error. In other words, the clinical practice of working with sounds, as such, might appear, in some instances, to have

[3]Johnson, Wendell. **The Influence of Stuttering on the Personality.** University of Iowa Studies in Child Welfare, 1932, Vol. V, No. 5. Pp. 140.

[4]Faunce, R. O. "The Relation of Proportion of the Tongue to Its Control in Articulation." University of Iowa thesis, 1928.

[5]Fymbo, L. H. "The Relation of Malocclusion of the Teeth to Defects of Speech." Archives of Speech, I, 204-216.

been carried beyond a point warranted by the known facts. It is quite likely, for example, that in certain cases articulation is defective with reference to certain words rather than certain sounds. Additional knowledge related to this question would be of great practical value.

Aphasia, Cleft Palate, and "Common" Speech Disorders

It would be impossible in a brief report to discuss all types of speech and voice disorders, and stuttering and articulation disorders have been emphasized for the simple reason that they are the most common problems dealt with by the speech correctionist. It can only be mentioned here that the most extensive studies of aphasia have been reported by Head[6] and by Weisenberg[7]. With regard to the speech difficulties of cleft palate and harelip cases, an illuminating analysis has been reported by Cobb and Lierle[8].

There is one area in speech pathology in which the problem of the differentiation of phenomena has been investigated very little. In fact, the problems in this area must still be discussed largely in a definitely pre-scientific language, made up of such terms as "stage fright", "emotionality", "poise", "personality", "attitude", etc. In this vaguely defined field we find the speech problems of those individuals—and they are legion—who find it difficult to address an audience, make a sales talk, or carry on an interesting or intelligible conversation at a dinner table. Such individuals, for reasons not generally stated specifically in speech correction manuals, leave their listeners indifferent, confused, or annoyed. Because we lack suitable diagnostic terms, these "poor speakers" practically never receive definite clinical attention. In fact, in most educational institutions and in society generally they seem to be regarded as "normal" speakers—a sad commentary on our generally accepted speech standards. One has only to listen critically to the speech of a hundred persons at random in order to realize that we are incredibly backward in matters of speech education. It may fairly be said that if general medical practice were no more advanced than speech correction, most of the common and less sensational diseases would not even have names. It is encouraging to report, however, that some enlightening work in this connection has been done, particularly by Barnes[9]. Certainly here is an instance in which the chief research need at the present time is definitely that of diagnosis.

Conclusion

Research needs in speech pathology center around the need for investigation of more highly differentiated phenomena, and of their inter-relationships in terms of spatial and temporal order. With regard to stuttering, there is needed particularly more thorough investigation of the "onset of stuttering", with particular reference to the phenomena related to sound and word repetition. Secondly, there would appear to be considerable value in detailed investigations of the spatial and temporal order in which so-called stuttering phenomena occur. Finally, studies should be made of stuttering considered not as a response, but as a stimulus. As far as disorders of articulation are concerned, more knowledge is needed with respect to the relations between speech function and anatomical structure, in order that satisfactory criteria of the "normal" might be determined. Also, the "sound" concept should be thoroughly investigated, insofar as it underlies current classificatory systems and diagnostic and remedial practices. Finally, it is to be pointed out that the "common" speech difficulties of the general run of people have scarcely been investigated at all; diagnostic studies in this area are particularly needed.

Current Remedial Practices

Insofar as this was to be a research report, it was necessary not only to minimize discussion of remedial practices, but also to imply that current remedial methods might well be improved. In emphasizing shortcomings and research needs, however, the writer has been somewhat apprehensive lest the value of past accomplishments and of current theories and therapeutical principles be minimized. For this reason, and at the risk of detracting from the unity of this paper, there are here presented a few of the recent publications which deal with more practical aspects of speech correction:

(*Continued on page* 45)

[6]Head, Henry. "Aphasia and Kindred Disorders of Speech." 2 Volumes. Cambridge: Cambridge University Press, 1926.

[7]Weisenberg, T. H. "A Study of Aphasia." Archives of Neurology and Psychiatry, XXXI (1934), 1-33.

Weisenberg, T. H., and McBride, Katherine E. "Aphasia, a Clinical and Psychological Study." Commonwealth Fund and Oxford University Press, 1935. Pp. xvi + 634.

[8]Cobb, Lois H. Kleuver, and Lierle, Dean M. "An Analysis of the Speech Difficulties of 56 Cleft Palate and Harelip Cases." Archives of Speech, I (1936), 217-230.

[9]Barnes, Harry G. "A Diagnosis of the Speech Needs and Abilities of Students in a Required Course in Speech Training at the State University of Iowa." University of Iowa Doctor's Thesis, 1932.

American Research Studies Concerning The "Behavior" Type of Exceptional Child

ESTHER M. BAKER AND EDW. H. STULLKEN

THE literature concerning the "behavior" type of exceptional child is so extensive that only those articles or books whose titles seemed most promising were reviewed. It is probable that many excellent studies have been omitted. No indices prior to 1929 were consulted. Certain studies were selected for mention which appear to be representative of the various types of educational research. Unfortunately, neither the University of Chicago nor Crerar Libraries (Chicago) possessed the many theses in this field and, therefore, this source of information has been practically untouched. Two or three non-American studies are mentioned for comparative purposes.

Examination of the literature concerning the behavior type of exceptional children would indicate that progress is being made toward the realization of fundamental needs of this group as outlined by Dr. Martens (40:5). Individual studies will be cited to show the techniques involved in the diagnosis, in the curative and remedial treatment, and differentiated education of behavior problem pupils. There appears to be a steady increase in the realization of the importance of this field if the ever increasing number of scientific investigations may be considered to form an index. These studies are also becoming more purely scientifically descriptive rather than involved explanations.

BEHAVIOR CHARACTERISTICS OF MALADJUSTED CHILDREN

A. Confustion in terminology.

The present confusion in terminology makes it very difficult to summarize research in regard to the behavior type of exceptional children, and, also accounts, in part, for the disagreement among the conclusions reached by research workers. In certain studies "the behavior problem" child is used as a general term to cover such varied groups of children as the delinquent; the nervous or emotionally unstable including certain speech disability cases; extremely aggressive non-delinquents; and the withdrawing or highly introverted (33:12). In other studies the term is used merely to designate conduct problem cases of a pre-delinquent type while "personality" difficulty cases, the actual delinquents, and the nervous or emotionally unstable who are not consistent classroom disturbers are not included. Thus we have a difference not only in type but also in degree.

A fairly large number of students use the term "behavior problem cases" as a general category with two subdivisions. In the first or the "conduct" group are placed the delinquent or pre-delinquent and in the second are those with "personality" maladjustments or cases with psycho-neurotic trends. Thus, F. Brown describes "conduct" cases as "those who dissipate huge quantities of energy in futile attempts to adjust personality and environmental needs," while the second group "relinquish the struggle for personality survival by retreating into their own world" (10:256). Paynter and Blanchard define the groups thus, "Behavior difficulties are with few exceptions those which interfere definitely with the individual's adjustment to the regulations of organized society . . . . . Just as some of the personality traits hint at the possibility of a later psychopathic condition so do certain of the behavior patterns suggest the development of delinquent trends if they become chronic habits (50:2).

It is agreed that the two groups are not mutually exclusive. It was found by Paynter and Blanchard that combinations of the traits of "conduct" and "personality" maladjustment were four and five times as common in the cases they studied as the appearance of one type of behavior alone (50:27), or stated another way, social maladjustment is invariably present in a number of forms (54: 244).

B. Studies concerning characteristics of "behavior problem" children

Numerous studies which sought to define those characteristics which caused children to be designated as "problem" cases have been made. Certain studies drew their cases from those known to clinics, others studied court cases, while the majority based their studies upon findings made in regard to problem children in public or private schools. Certain differences found in the studies appear to be traceable to the fact that there are obviously more severe conduct cases

among the delinquents and more definitely neurotic among the clinical cases, than in the usual problem cases of the school.

A study in New York of 295 children referred to a child study clinic sought to determine which types of cases were referred by different persons or agencies. They found that the schools were apparently most concerned with conduct, child study groups with neurotic and subnormal, and parents with discipline cases (37:277). They often found that the cause for referral was very different from the difficulty which the clinic felt to be the outstanding problem.

Some fairly recent studies still assume that a child either possesses a trait or fails to possess it entirely, but there is a growing tendency to avoid this "unit" concept by using a rating scale. Numerous studies employed the Wickman-Olson-Haggerty rating scales or similar devices. One of the newest and most exhaustive studies which has involved the establishment and employment of rating scales appears in a new book by Baker and Traphagen (5).

One of the most ambitious studies of characteristics of behavior problem children was made by H. S. Williams in the form of a survey of predelinquent children in ten midwestern cities. In the study questionnaires were submitted to the teachers in order that they might check the characteristics which they had found most prevalent in predelinquent children. The traits were then classified into several categories. In this study it was found that 97% of the problem children were considered to be socially maladjusted (64:172).

In other studies, such as the one carried on by Boynton and McGaw in Nashville, no definitions were supplied by those making the study, but the teachers were instructed to select a definite number of their most poorly adjusted pupils and to list those traits which they felt the child possessed that caused him to be considered maladjusted (8:217). Virgil Dickson made a similar study of 500 Berkeley pupils who were rated by principals and teachers as being most seriously maladjusted (20:94).

Control groups were not used in all the studies or are not mentioned as having been used. In some investigations, the control group was selected at random from the remaining school population who were assumed to be well adjusted. In others, a best adjusted group was compared with a most poorly adjusted one and these two extremes in turn compared with those groups between. In other studies, the best and most poorly adjusted are contrasted.

Many studies either directly or indirectly influenced by Wickman's study of *Children's Behavior and Teachers' Attitudes* (63) have asked the teachers to list not only the traits most commonly found among the problem children but, also, those which the teacher rated the most serious. Wickman's influence was also mentioned in causing certain students to draw up questionnaires expressly mentioning traits most common among the "withdrawing" or "personality" mal-adjusted type of child.

Despite the source of cases studied, techniques employed, or personnel of investigators, there is a surprising uniformity as to general conclusions reached. Stagdill states that teachers and parents are interested in behavior which makes for smooth running households and classrooms, but are not concerned with the wholesome development of children. Clinical psychologists stress active, extroverted social behavior regardless of the inconvenience it may cause adults (59:36), or, as Dr. Shumaker states his conclusions after an extensive study of the "Behavior Problem Child in the Catholic Schools", "most problems referred were for violations of moral standards and adult authority." Personality and emotional problems were negligible (55:21) or more specifically the traits are discussed thus: Teachers classified a child as a problem because he was inattentive, careless, uninterested, disturbed routine, or was disorderly (8:221)

EXTENT AND DURATION OF PROBLEM BEHAVIOR

A. Percentage of cases

EXTENT

1. *In the general school population*

All children are at times problems. In every group the significance of behavior problems is definitely relative to the group. Dr. Baker has estimated "serious maladjustment cases make up at least 3% of the school population" in the conduct behavior group alone and "if the negative be added the number will be doubled" (4:363). L. M. Snyder in a study of Jersey City schools found 6.9% of the enrollment to be rated by the teachers as belonging in the category of problem children in spite of the tendency of teachers to disregard the withdrawing pupils (56:344). In a survey made by H. D. Williams a range of 1.2 to 5.3% predelinquent with a median of 2.6% was found. In this study the so-called personality cases were excluded (64:173).

2. *Percentage at various age and grade levels*

Behavior problems exist in every grade from kindergarten to university levels. Interesting-

ly enough the studies of the age distribution in relation to problem behavior cases in public schools follow the curve of normal distribution fairly consistently through the period of compulsory education, while that of grade placement does not. The age of greatest frequency varied according to various studies from 11 to 13 years (20:100, 35:162) with two-thirds of the cases between 10 and 15 years according to Williams (64:172). There seems to be much less relationship between adolescence and misconduct than it was once assumed. It was the conclusion of one writer that the stress and strain of this period did not tend to produce neurotic tendencies as measured by standardized tests (1:149, 13:256).

The grade distribution followed the curve fairly consistently to the eighth grade where it dropped sharply. According to several studies it rose again in the ninth (25:111). Apparently the hope of graduation tends to curb misconduct. The studies agreed that the fifth and sixth grades were found to have the highest incidents of misconduct (64:172, 56:350). In a most exhaustive study made at the Institute for Juvenile Research by Ackerson the problems per child increased up to twelve and then decreased until seventeen (1:256).

DURATION

Probably due to the fact that all children are at times considered to be problems, the tendency has been to exaggerate the temporary character of maladjustment. One interesting study in this regard was made of 6737 pupils by M. L. Fisher who found that the children in each grade tended to receive the same behavior rating by all teachers who had known them from kindergarten through the highest school levels (22:364).

It is scarcely necessary to cite the vast body of literature which would support the statement that the criminal and delinquent groups are drawn very largely from the "problem" school children (26:608, 3:3). "Problem children of the juvenile court are usually known as problem children in school for at least two years before they come to the court" (38:12).

While additional "longitudinal" studies of problem children are still needed to show sequence of behavior in regard to development of the delinquent, such studies are particularly needed for the personality problem child. Since crime tends to be characteristic of the young adult or older adolescent, insanity tends to culminate at a greater age and thus make etiological studies more difficult to relate to school maladjustment (27:566).

FACTORS ASSUMED TO BE INVOLVED IN CAUSATION

A. Present concept of multiple causation

Most students of the field of behavior problem children appear to agree with the Glueck's statement in regard to delinquency, that "We know the complex of factors . . . . . but not their exact interactions" and that "given poverty, plus mental deficiency, plus residence in a crowded slum area with ample opportunity for wrong doing and a tradition of anti-social conduct, the chances for delinquency are still further multiplied" (24:2).

There are many studies which have sought either to eliminate certain factors or add them to the complex or in other cases attempt to determine their interrelations. No recent study was examined which sought to establish any one factor as universal, as did the early studies, especially as was true when the mental testing movement was very new. While certain studies are mentioned in regard to definite phases of causation, it is not intended to imply that these did not take into account the multiplicity of factors.

B. Specific factors

1. *Physical traits*

a. SEX

DIFFERENCE BETWEEN SEX AS TO AMOUNT OF MISBEHAVIOR

In regard to the importance which sex difference plays in the determination of frequency of maladjustment most studies appear to agree very closely. Boynton and McGaw reported that three-fourths of the cases reported were boys. Snyder's study in Jersey City reported that 88% of problem cases selected by teachers were boys (56:343), while the study made by Williams of midwestern cities listed four times as many boys as girls (64:173). These and similar studies were largely confined to the conduct type of problem child. It is probable that studies including both types of maladjustment would show very much less difference between the two sexes. Dr. Haggerty in an early Minneapolis study noted that while there is a wide discrepancy between the number of problem boys and problem girls, insanity figures for women are as high as for men (25:110).

DIFFERENCE BETWEEN SEX AS TO TYPE OF PROBLEM PRESENTED

Certain investigators have also studied the type of difficulties presented by boys as contrasted with those shown by girls. Most of

the studies indicate that while boys are more resistant to authority and engage in more misconduct such as stealing, girls are more interested in sex and show more feelings of inferiority (14:189, 64:172).

b. Bodily structure

The findings of Kraeplin and others in regard to correlations between body build and behavior have been influential in stimulating research in this regard. While Ackerly's study showed no difference in body build between the well and the poorly adjusted (1:160), certain psychiatric studies showed tendencies toward differentiation among problem cases having psychotic trends.

c. Defects and disabilities

Structural and functional

Much of the apparent disagreement between investigators in regard to the relationship between physical disabilities or defects and behavior difficulties is attributed by Christie to the lack of standardization in medical examinations. He suggests that physicans have been influenced in their diagnosis not only by the particular school of medicine to which they adhere but also by their field of experience. Thus, general practitioners and specialists, such as clinical pediatricians, tend to put very different interpretations upon the same phenomena. Research students have frequently compared findings made upon a special group of problem cases by specialists with the findings by examination which did not include blood tests, etc., made by general school physicians upon the general school population (15:18). Perhaps, even more important is the lack of standardization in medical examinations. Paynter and Blanchard have also called attention to this difficulty (50:31).

Dr. Christie states that the apparently large number of defects found among problem children suggest correlations in the socio-economic field rather than in the physical. He specifically points out that poor oral hygiene, diseased tonsils, and dental caries indicate a general lack of care and supervision. He concludes that apparently no one or combination of physical defects has anything to do with causing delinquency (15:21) and that essentially the delinquent does not form a separate group physically. A. A. Owens, Healy, Bronner, Hoag, Williams and others agree fairly well that there are probably no more disabilities and defects among juvenile delinquents than among the general populations of school children of the same community (48:173). Dr. Ackerly's study also found no difference in regard to physical condition between well adjusted and poorly adjusted adolescents (1:160).

Studies which have resulted in somewhat different conclusions include the one by Virgil Dickson of Berkeley in which he found that all of the problem children suffered from sufficient physical difficulties to cause real stress or strain but qualified this statement by adding that in the school population were many people suffering from like physical difficulties who manifested no abnormal behavior difficulties (20:100). Baker summarizes the viewpoint of many research studies in the statements that "behavior problems are not limited to the nervous or physically disabled, but a good proportion have disabilities which probably play a part" (4:365), or "while physical examination and correction of irritants of a physical character must accompany work with behavior cases no marked decrease in the total number of behavior cases can be expected."

Other students have been interested not only in the presence or absence of certain structural or organic defects or traits, but have also been concerned with the relationship between endocrine disturbances and misconduct. Because of the hyperactivity noted as characteristic of most problem children, it is possible that some studies which are being carried on now will show very interesting results. A characteristic study in this field was made by J. Levy of 255 children in an attempt to discover whether there was a relationship between basic metabolic rate and children's behavior (34:100). Another study was concerned with the relationship to nutritional disturbances (19:396). While case studies are fairly common, few reliable statistical studies have appeared in this field.

H. K. Moore decided from his study that problem boys were probably below average in athletic abilities (41:87), while M. L. Fisher reported that they outranked other children in sport activities (22:354).

2. *Psychological Traits*

a. Mental

A. A. Steinback summarizes present day thought in regard to the correlation between intelligence and conduct thus, "While the consensus of opinion among students of maladjusted pupils was that mental retardation is one of the most constant factors in respect to anti-social behavior there are certain dissenting voices" (58:691).

Among the studies which indicated that dull mentality was related to school and social maladjustment is one reported by C. H. Jaggers of 47 problem and non-problem children in which

the results of various intelligence tests showed a significant difference of 15.5 points in favor of the non-problem children (32:254), and concludes that there is a definite relationship between aggressive misbehavior and poor intelligence (32:258). Similarly R. P. Daniel reports finding significant differences between the intelligence scores of a reform school group, a problem group, and non-problem group of colored boys (17:59).

J. Levy concluded from a study of seven hundred children that "while personality and emotional problems increased definitely with I. Q. level, there were few problem children with delinquency trends among the brighter children" (35:162), and that the brighter pupil struggled with personality problems while the duller struggled with the external environment. Most writers agree that there tends to be a decrease in conduct difficulties with the rise in I. Q. (7:552).

Numerous studies have found that behavior cases tend to cluster around the lower 80's in I. Q. This was found to be true of delinquents by A. A. Steinback of Philadelphia (58:69), and by McClure of Toledo (46:41). It was also found to be true in a study of problem children in Jersey City (48:177, 56:348), in the Montefiore Special School in Chicago (42:95), and in the Thomas Edison School in Cleveland. In view of the large number of studies which have found the median I. Q. of behavior cases to be in the border-line group, it is possible that while the children in this group are not likely to be able to meet the requirements of the regular school room, their mental deficiency is not sufficiently apparent to be recognized. Thus "much that has been considered as unruliness, stubbornness, is often really retarded intelligence" (37:279).

Among the writers who did not find the intelligence quotient as significant are F. Brown (13:257) and Virgil Dickson (20:100). However, both studies fail to report norms for comparable control groups. Some investigators have attempted to show that while there may not be a positive correlation between a low intelligence quotient and misconduct there is a close relationship between specific phases of intelligence and maladjustment (49:152). In practically all of these studies there is a reiteration of the fact that both intelligence and misconduct standards are relative to the groups and that the problem children in the regular classroom are likely to come from the lower quarter.

b. Emotional

In the study previously mentioned by Dr. Ackerly the most significant differences between the delinquents and non-delinquents were found to be primarily in the emotional field. A greater tendency toward extroversion, overactivity, restlessness and emotional imbalance was noted (1:160). Dr. Fisher states that "measured differences between problem and non-problem children in a public school system of 6737 pupils indicated that most reliable group differences lie in the social and emotional field (22:352).

In a recent study by Healy and Bronner of delinquent boys and their non-delinquent brothers (frequently a twin), the most striking difference was found to lie in the emotional field. The delinquent was subject to more emotional upsets and was more active and restless (28:436). While H. K. Moore found in his Cleveland studies that problem boys are less stable and emotionally balanced than non-problem pupils, he found no consistent trend toward any one type of disorder (43:87).

The relationship between different types of misconduct, such as truancy and emotional imbalance, was studied by I. T. Broadwin (9:259) who concluded that "truancy may be considered psychopathic when not explained by mental retardation or bad companions (11:773).

As was mentioned previously, there is yet much to be learned concerning the neurotic basis of maladjustment (13:257). Many generalizations such as "the unruly child is an emotionally disturbed child who needs careful attention" (13:258), "misbehavior is a blundering attempt to satisfy legitimate emotional needs and is a symptom of individual dissatisfaction" (6:242), or that "most misbehavior arises from wrong emotional training" (20:100) appear frequently in the literature. Case studies are abundant, but statistical support is still lacking largely due to the fact that there is little uniformity in the theory of the students in the field and less standardization in techniques of measurement.

c. Volitional

The relation of volitional factors to maladjustment has received much attention from research students. Although the importance of this factor is not to be minimized, there is a growing realization among educators that conduct is not merely volitional and cannot be modified merely at will (4:363).

d. Educational

While there may be disagreement as to whether pupils become retarded because they are problem pupils uninterested in school and frequently absent, or become problems because they are retarded, most studies indicate that

pupils who misbehave are retarded educationally both upon the basis of their chronological and mental ages (31:55). Such has been the finding in regard to the pupils in both the special schools for problem boys of Chicago and the Thomas Edison School of Cleveland (43:87, 61:228, 30:75). The survey made by Williams of ten midwestern cities found the predelinquent children to be retarded educationally (64:169). The study made by Dr. Shumaker of the problem children in the Catholic Schools showed a consistent tendency toward educational retardation (55:48). Many recent studies confirm Dr. Haggerty's apt allusion to the unholy trinity of overage retardation, low intelligence, and undersirable behavior (25:116).

However, it must be recognized that the school and court studies are concerned primarily with "conduct" behavior cases. Certain studies drawn from these sources indicate that "personality" behavior cases might show a very different tendency. Paynter and Blanchard found that problem pupils in demonstration clinics of Los Angeles and Philadelphia showed no trends toward low educational achievement (50:63).

The study of Stein and Barry of maladjusted junior high school boys may be cited as an example of the many research studies centering around the problem of the relation of special reading disability to behavior problems (57:312).

3. *Social traits and background*

a. Racial

Studies vary to a certain degree as to the extent that race plays in determining social maladjustment. An Ohio study of delinquents found that no racial group contributed disproportionately to the delinquent group (14:189). However, the weight of evidence is not in agreement with this conclusion. A study by Moses of the "Community Factors in Negro Delinquency" found that delinquency was more common among the negroes (44:1). The Ackerson study of five thousand problem children had too small a percentage of the colored group to come to definite conclusions in this regard, but the results indicated that the colored children were more prone to misconduct of the aggressive or boisterous type than white children (2:99). The studies of Burgess (12), Shaw (53), and others showed that the children of the newly arrived immigrants and the colored contributed disproportionately to the problem group. The greater tendency toward maladjustment among certain racial groups is explained in the tendency of the newly arrived immigrants and negroes to occupy the poor and disorganized areas and to take on the attitudes of the area (30:57). The difference in delinquency rates between the various racial groups appears to be in the disparity in opportunity and cultural surroundings (53:8, 2:102, 18:26).

b. Ecological

M. G. Caldwell found that urban communities of Ohio furnished more than their proportionate share of delinquents (14:187). While the Williams study of midwestern cities found no relation between the size of the city and the rate of maladjustment, there were significant differences between schools in various sections of the same city (64:173), or as stated by one writer, misconduct appears "to be caused by certain pathological features of social environment to which the modern youth is exposed in the daily round of his secondary social contacts" (14:190).

While most of the work in this field has been done in regard to relationships between area disorganization and predelinquent behavior, certain studies are now being carried on as to relations of type of city area to its rate of insanity. Such studies should stimulate and aid studies of personality maladjustment among school children.

c. Economic status

While it is not assumed that misconduct is confined to poor children, the ecological studies tend to confirm the findings of educators that the poorer communities contribute a disproportionate share of misbehavior cases. The relationship is not direct, but is assumed to lie in the fact that the poor person tends to live in the disorganized low rent areas. The problem pupils in the Montefiore Special School of Chicago as well as those in Cleveland, Philadelphia, and Boston (23:228) have come largely from the dependent and marginal groups (61:234). On the other hand while studies of the background of the "withdrawing" child are limited, one study by N. A. Ridenour indicated that thirty "personality" problem children studied came from homes of superior social cultural advantages (51:143).

d. Mobility

The Montefiore Annual Reports (42:33) and results of research studies of maladjusted pupils have called attention to the high rate of mobility of this type of child (22:354).

e. Home conditions

In the Caldwell study the broken home was not found significant (14:189). Hodgson

(30:71) and others indicated there was no significant relation between overtly broken homes and delinquency, but found the emotional tensions far more significant. The Mowrer study of *Family Disorganization* indicated that most of the problem children were to be found among newly arrived immigrant groups which do not have a high rate of broken homes (45:110).

f. Family size

Certain studies found the size of the family of no particular importance in determining misconduct (14:189). Others found truants (30:73) and delinquents (23:228) to come from large families, but rates for control groups from the same nationality and social status are not mentioned. There is, also, a certain disagreement in regard to the part sib rank plays (48:14). Similar studies have been concerned with the significance of the role of the individual in primary and secondary group relationships in determining maladjustment (54:71).

TREATMENT METHODS

A. General

Neither the community nor the school alone can hope to effect a material reduction in the rates of maladjustment (4:370) or as stated by Dr. Martens, "Not until society is willing to devote itself to continued, coordinated, and effective treatment of problem behavior of children can it hope to succeed in any effective control of crime and psychosis among adults" (39:69).

Much responsibility has been placed upon the schools for control of maladjustment. It has, for example, been the conclusion of one writer that the dull pupils are no more prone to maladjustment than the bright ones, but are forced into difficulty by mismanagement and mistreatment (52:100). A study by G. E. Hall of 1285 young offenders at Pontiac suggested that much delinquency could be spared if the school cared for the education of the dull in an adequate fashion (29:2). Another writer finds that our schools are making problems of those children who learn with difficulty (65:343). Dr. Elise Martens reported that there was a growing belief that misconduct, including truancy, should not be handled in courts (38:13).

B. Specific

The recognition that serious misconduct cases cannot be handled in the ordinary school environment (36:66-67) has led to the setting up of special schools and classes to care for this type of problem behavior child. Reports concerning these various modifications, and forms these have taken, are numerous (16:495).

1. *Parental Schools*

The parental school represents one method of dealing with misconduct cases. Many criticisms both favorable and unfavorable of this type of institution appear in the literature (31:60) but no wholly adequate substitute has been found.

2. *Special Rooms*

Special rooms for truants and incorrigibles have long been known. Investigators have found that the different types of misconduct cases cannot well be handled in one group (57:312). It has also been found that conduct cases should have immediate access to psychological, medical, and psychiatric service. Clinical service is unfortunately not available with each school with a special room. Neither is the differentiated program, so important for this type of exceptional children, possible.

In order to eliminate the difficulties met in the special rooms, special schools have been established which make it possible for the school to diagnose and treat behavior difficulties effectively (49:153, 62:78, 3:321).

a. Remedial and adjustment

The services which remedial rooms have been able to provide in caring for and preventing maladjustment are well known. Separate reports would be required to give an adequate discussion of this work.

b. Corridor or observation rooms

Corridor or observation rooms have been recommended for the study of maladjustment cases. These differ from remedial rooms in that the placement is temporary.

c. Evaluation of treatment methods

A study was made recently by Miss Faucher of the social adjustment of former pupils of the Montefiore School in which she concluded that approximately 25% of the pupils were classified as failures (21:22). Additional studies should be made evaluating the comparative effectiveness of the different types of remedial and treatment plans in this field.

RECOMMENDATION

Future studies should be delimited to particular phases of the subject in order to make possible a more thorough piece of research work.

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Studies of Gifted Children

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In 1929, when considering the need for differentiation of public school instruction, Professor Cubberley observed: "While the average child needs good attention, the really important child in the schools—the one most worthwhile to future State—is the boy or girl who is decidedly quicker, brighter, and surer than the average . . . . . So far but little attention has been given to the needs of the supernormal child—the child who represents the best asset of public education. It is from this class of children we must draw our leaders for the future."

In a democratic society there is need for responsible leadership. The literature on gifted children is meager. The present summary of researches and studies indicates that some progress is being made.

Characteristics of Gifted Children

Who are the gifted?—In general, the term "gifted" refers to the most intelligent one per cent of the juvenile population. The concept should include not only mental superiority, but also the physical, social, moral, and educational status of the individual in addition to the relative development of special gifts or abilities in any one of these categories (79). Hollingworth (53) defines the gifted in similar terms as the approximate one per cent of all school children who test above 130 I. Q. Goddard (41) assumes the gifted to be "all children above 120 I. Q. capable of doing enough more and better work than the average to warrant giving them a special opportunity."

Selection of the Gifted.—Superiority may be looked upon as ability on an intelligence test, or an actual accomplishment in a given field. Richards-Nash (88) cautioned against the use of achievement as the sole criterion, because it is often an end result depending not on ability alone, but on chance and the interaction of other factors.

Mental tests are now commonly used for discovering superior children. Whipple's work (109) marked a significant development on behalf of the use of mental tests in the selection of the gifted child. His study showed the unreliability of selections based on teachers' judgments,—some pupils were wrongly placed in the group for gifted children, and some were kept out of the group by this basis of selection,—but Whipple found that these errors could have been reduced to zero had pupils been selected by mental tests.

Admittedly the use of mental tests in the classification of the gifted has certain limitations (12). Richards-Nash (88) cites these: mental tests measure only intelligence; they give information as to present mental status but do not adequately predict the course or nature of future development. Witty and Wilkins (121) judged mental tests to be a relatively meager, inadequate, and incomplete picture of the total unit of personality.

Baldwin (79) urged that in the concept of superiority, for purposes of school classification, there be included a consideration of the complete personality of the child, including physical, mental, social, moral, and educational development. He pointed out the necessity of attending to the relative development of special gifts or abilities.

Mental Traits.—In his extensive research on one thousand children in California testing above 140 I. Q., Terman has cleared away many misconceptions relating to the precocity of the gifted child and to the theory of his eventual retrogression to the average. All investigators concede a superior mental organization as a characteristic of gifted children. Terman (104) found that the high degree of general intelligence evidenced by the gifted is the "ability to carry on abstract thinking". Brown (13) conceded that it may be true that ability to deal with abstract ideas is more important than any one ability in achieving school success, but at the same time he noted that common observation and experimental evidence reveal that such an ability is not the only factor.

Terman (103) found the gifted to excel the control group at all ages in mean ratings on intellectual traits, especially in "general intelligence", "desire to know", "originality", "will power", "perseverance", "desire to excel", "sense of humor", and "common sense". Among the differentiating intellectual characteristics of the gifted often mentioned are: ability to make logical associations, longer span of attention, originality, initiative, power to generalize, and deep and varied interests (1, 10, 81, 103). The mat-

● This article was prepared with the cooperation of a committee of Major Work Class teachers of Cleveland, Ohio.

ter of interest makes certain demands on the education of the gifted; specific interests determine spontaneous activities; superior achievement is generally conditioned by the focusing of concentration of effort on a special goal (88). Experimental groups of gifted children have been found to have well marked talents and aptitudes (53, 88, 103). DeVoss (103) found a greater unevenness of abilities among gifted children than among unselected groups, but emphasized the fact that both groups were characterized by considerable unevenness of abilities.

Early studies indicated a fair degree of consistency in intelligence quotients but large changes did sometimes occur. Later studies revealed a probable relationship between intelligence level and I. Q. constancy. Two recent studies of gifted children report conflicting results. Stanford findings pointed toward a decrease of I. Q. with age; boys lost three points and girls thirteen points on the average, over a period of six years (14). Lincoln's (68) findings corroborate Terman by indicating a loss, girls losing more than boys, but not so great a loss as to impair classification of superiority. In the Harvard study (20), data seemed to indicate that the higher the I. Q. the greater the gain. Cattell (20) and Nemzek (80) concluded from their data that there is a definite tendency for the I. Q.'s of gifted children to increase. In the light of conflicting evidence, it may be justifiable to assume that the increases are due to practice effects. Nemzek (80) found a reasonably high relationship between first tests and retests but this does not necessarily imply a constancy of the I. Q. The wide range of fluctuations is a warning not to select gifted pupils on the basis of a single test. Identification seemed more reliable with older than with younger children.

College and Adult Status.—Contrary to popular opinion, experimental evidence and literature of the field show that college educators generally favor the idea of youths entering college as soon as they are mentally mature enough to meet scholastic entrance requirements. Studies (34, 38, 65, 85) showed the younger students to be better developed intellectually than average groups, and, because of superior native ability, to achieve higher scholastic success and recognition. Baldwin and Stecker (5), studying children clustering around 120 I. Q., showed that such children remain constantly above average as they approach maturity. Terman (14) has proved that 292 children testing above 140 I. Q. earned high scores in group intelligence tests at adolescence. Hollingworth and Kaunitz (56) found that 116 young children, testing at the hundredth centile by Stanford-Binet, maintained their status in the top three centiles of the white draft on the Army Alpha in its various forms, when past 15 years of age, though not yet fully mature.

Hollingworth postulated that mildly noteworthy accomplishments, such as winning honors in a first rate college, could be expected only from a child with an I. Q. of 160. Those who test below this status in childhood rarely win honors. Those rating 180 I. Q. or higher in childhood stand out or "find the tops" of tests at maturity. Their contemporaries with I. Q.'s from 140 to 160 did not approach them in honors won or test scores at maturity.

There is need for an answer to Goddard's (40) plea that ways be devised of measuring the life success of gifted students and their social worth as compared with average college graduates.

Physical Traits.—There is much experimental evidence to refute the misconception which once existed concerning the physical unfitness of the intellectually gifted child (53, 57, 76, 103). Actual measurements have disclosed that gifted children are both taller and heavier than unselected children of the same age (103). A high ratio between weight and height is maintained. When compared with unselected children, the gifted are superior in regard to effective speed of movement in tapping. However, strength and speed of hand are slightly, if at all, correlated among gifted children (57).

These findings have certain implications for policies of promotion. If grouped with children at their intellectual level, the gifted will be young for the group and hence outclassed in regard to physique and movement to such extent that teachers will rate them as deficient in motor ability. Continued availability of a gifted group through maturity is a requisite to ascertaining whether the gifted maintain their physical superiority.

Social Traits.—Research on gifted children has shown good social adjustment to be associated with high intelligence (103). As a group these children are rated above the average in desirable character traits. They are named as leaders more often than chance dictates, but it is to be remembered that the superior child is not always a leader and not always well liked by other children. A definite tendency is shown for gifted children to prefer older companions or those somewhat

equal to themselves in mental age (53). Traditional ideas of social adjustment are not valid for gifted groups. Distinction must be made between gregariousness and social service (88). The latter may take the form of scientific research, invention, literary pursuits, and other attainments not associated with the ability to attract and influence people.

Where the discrepancy between physical size and intelligence is great, extremely intelligent young children are not interested in the games of children of their own age and often fall back upon some form of solitary, intellectual play, or upon reading (1, 53).

Emotional Traits.—Hollingworth (53) found that gifted children rated as well as unselected children in emotional stability and that there are fewer neurotics among them than among other groups. In a three-year comparison between 51 superior school children and 51 inferior school children, Laycock (67) found a greater number and degree of maladjustments among inferior children. Zachry (123) outlined factors essential to the personality adjustment of the superior child: an opportunity to make use of his abilities; an opportunity to see and respect others' talents; an atmosphere of group endeavor so as to avoid an attitude of snobbishness. One section of the White House Conference (111) suggested that parental attitudes shape the personality of the child, while his material surroundings are not of vital importance. Coy (28) stated that she had never known a gifted child to become egotistical unless encouraged by his teachers or parents. Through exploitation at home and at school, the gifted child may become conceited and snobbish, but it is generally the observation of teachers that the less gifted a child is, the more he is likely to develop attitudes toward others which do not win social approval (18, 78, 79).

Teaching Methods

During the past twenty years educators have become increasingly aware of their responsibilities toward the gifted. While unanimity of opinion concerning groupings does not seem to exist, considerable agreement is voiced concerning the necessity of differentiated content and procedure in order to provide for individual differences. Horn (59) expressed the belief in qualitative rather than quantitative enrichment by stating that gifted children do not respond more quickly than the average, but they do things differently. He considered differentiation to be of little value when based on the element of variation among children to cover the same course of study at different rates of speed.

Curriculum for the Gifted.—Horn (58) has summarized specific trends in curriculum differentiation for gifted children. He emphasized the importance of vitalized programs utilizing environmental influences. Similarly, Hollingworth (125) urged that gifted children become familiar with the history of common instruments and techniques of civilized living using biography as a fertile field of enriching experiences. Johnson (61) advocated a curriculum organization whereby the gifted child might reach the required goal in a subject and apply his skill in varied activities before another subject is studied intensively. The encouragement of creative activity only after the child has reached the goal of accuracy, was a belief for which Johnson contended. Bernstein sounded a keynote for differentiated types of instruction when he said, "Mere quantity of work should not be the objective; emphasis should be placed on a high grade of achievement" (10).

Ball (7) suggested as the curriculum for the gifted child, a unit of work for a year's duration, providing for mental, physical, emotional, and social development. The University of Chicago High School supplemented the regular curriculum units with projects prepared by the instructors for superior students (83). The plan assured not only completion of the regular work, but utilized the special abilities and interests of the student. Gray's account (45) of improving instruction in reading is of practical significance for school children. An account of work being carried on in Pasadena through which an enriched curriculum is provided for mentally gifted was reported by Johnson (62). Projects in handwork and social activities accompanied the academic instruction, all of which was centered about one large unit of interest chosen for the year.

In many studies the possibilities in creative activities are truly remarkable (31, 90, 105). However, Mersand (75) suggested that a significant trend be noted in the education of the gifted away from mere self-realization and expression through poems, paintings, and sculpture toward training, first, in recognition and understanding of social obligations, and then for worthy social participation and awareness of the world at large. Adams and Brown (1) recommended the socialized procedure as a useful method because it involves the exercise of the social virtues of tolerance for another's point of view and patience for slow reactions,—counter-balances for tendencies to-

ward egoism. The seminar method of recitation is reported by Hollingworth (53) as being feasible even with very young gifted children.

The project method is a successful technique (1, 53) since studies of characteristic traits of the bright (13, 103) disclose superior reasoning ability, power of analysis and synthesis, and associative powers. The large-unit span and combination of mental functions demanded by the project make it a valuable method for them. In teaching gifted pupils in Cleveland (94), arguments for the project were based on three main differences noted when a comparison was made between superior and average students: (1) The interest span was found to be longer, suggesting larger units of work; (2) the work was of greater difficulty because of the better understanding of the pupils; (3) the greater scope of the units included more supplementary topics than can be studied by an average group.

Hollingworth (53) cautioned against relying on the project to the exclusion of drill for proficiency in the "tool" subjects. While drill may be reduced due to the quicker perceptions of the gifted, it should not be abandoned altogether. Some writers claim that even under a system of homogeneous grouping, adaptations of teaching method will need to be made by the teacher. Washburne (79) advocated the use of individualized instruction as the only solution in the real adaptation of education to gifted children.

English Field.—Danielson (30) noted a consistent gain beyond normal expectancy on the Stanford Achievement Tests after a year's work of reading widely in seven fields. It was possible to increase the level of achievement in content subjects by means of more varied and extensive reading of an interesting character. Rhoads (87) presented evidence that a course of systematic training in analytical reading skills enabled gifted children to show greater progress than did the reading of many books for appreciation only. "To do more extensive work than regular classes and do it joyfully," was the aim of the English classes for gifted children in a junior high school as reported by Catlett (19). Bell (9) advocated the use of progressive education methods as the answer to the problem of the gifted. Cohen (22) concluded that a most serviceable aid was a teacher who shared a vital intellectual life with gifted students. The project method and individual research method were reported by Lass (65) as the means used to make English serve as a way of training gifted pupils toward efficient leadership. Procedures at the University High School in Chicago were described by Shepherd (98) and included special features such as cumulative guidance records, creative writing opportunities, and analysis of voluntary reading records. Witty and Lehman (120) reported that gifted children make their own differentiation in the curriculum through extensive reading. The voluntary reading lists for the experimental group of fifty children with I. Q.'s above 140 showed little interest in books dealing with fine arts, music, and drama. It was inferred that the usual school examinations fail to measure the difference in the outcome of the broader education which the gifted child is obtaining.

Physical Education.—Lawton (66) noted possibilities for improving the objectives and teaching of physical education so as to challenge the gifted child. This subject embodies the features of a truly educative force, especially in the field of mental hygiene. Shambaugh (97) indicated that gifted children can be taught to coach themselves, umpire their games, and help each other in learning rhythm work.

Social Studies.—Baster (8) expressed the opinion that the greatest problems in the social studies are really simple social relations understandable to children. Skinner (99) found that gifted students possess finer social and civic attitudes and larger capacity for emotional development than average pupils. He advocated direction, stimulation, and release from routine in teaching civics to gifted pupils. Steinberg (101) recommended the teaching of units of work based upon problems dealing with significant aspects of life and involving questions which constitute a challenge to individual and cooperative effort.

Mathematics.—In Cleveland, additions are made to the mathematics course of study for gifted pupils. The supplementary material consists of ideas added to broaden the scope of topics in the regular course of study for X classes, and the inclusion of topics, such as the history of arithmetic, banking, or money, not usually studied in regular classes (94).

The Arts.—French is often used in the curriculum for gifted children as an enriching subject (59, 94). Hollingworth justified the teaching of French to young gifted children because she considered it a tool of learning. "If one foreign language be mastered in the elementary school, the years beyond may be

used for mastery of a second and a third'' (125).

While gifted children may or may not excel in special talents, they have a strong love of beauty. Special work in art and in music is appropriate to their needs. The radio is becoming an enriching medium, especially in the field of music appreciation (125).

Foreign Education for the Gifted Child.—Although educational experimentation is largely undeveloped in European schools, some attempts have been noted to provide opportunity for gifted children (101). From 1917 until the advent of the Hitler regime, Germany experimented with ''children who show promise''. Special classes and also schools for talented children were formed on the basis of psychological tests.

Parker (82) reported on Austria's educational aims to break down the social and economic barriers for all gifted children. In most European countries the system of scholarships awarded on the basis of competitive examinations is the prevailing method of providing for the intellectually gifted child. America has not yet given consideration to the educational possibilities inherent in systematic and planned excursions, as have the European nations (101).

ADMINISTRATIVE PROCEDURES

Special Classes.—Although mentally subnormal children are generally segregated, whether gifted children should be segregated is controversial. The real need for segregation of the gifted is not so obvious since their physical and mental superiority is obscured by their present acceleration up to older average children. This is also true of their social and educational maturity (101). Early attempts at rapid advancement often resulted in maladjustments. Flexible grading systems and elastic promotion schemes did not prove satisfactory solutions to the problem of special provision for gifted children.

Data obtained by questionnaire in 1927 indicated that 45 large cities out of 220 were operating special classes for gifted children (60). Considerations that led to the establishment of special classes were: loss of interest and ultimate waste of intelligence in regular classes (29); neglect of social, religious, and moral values (21); and possibilities of careful study which special classes could provide (84). Jensen (60) considered special classes the best adjustment to individual differences among gifted children. Martens (71) stated that segregation is doubly advantageous because it permits the bright to work on an enriched program with pupils of their own mental caliber, while they associate with children of all intelligence levels in cooperative social activities. Hollingworth (53) published testimonies of pupils who had been segregated to the effect that the advantages of segregation outnumbered disadvantages. Carroll (16) approved segregation as a means of developing gifted children to capacity. Hennessy (48), Goddard (41), and Ball (6) concurred in Carroll's opinion.

As the result of an experiment in segregating first grade pupils, Kyte (63) judged that to group gifted children makes possible rapid progress which is the ''normal'' rate for them. This acceleration in no way contributes to undesirable social traits. Carroll (18) believed that homogeneous grouping helped in preventing attitudes of snobbishness and egotism. Zirkle (124) advocated segregation, to be followed by an enriched course of study accomplished in a shorter period of time. Witty and Wilkins (121) found that educational attainment of gifted pupils in unsegregated classes falls far short of expectations based upon calculations from intelligence measures.

Segregation should not be confused with isolation (71). Gifted pupils are an integral part of the school and should have practical exercise of initiative and leadership through sharing responsibilities in running the school (101). Experimental data are lacking to establish clearly the superior advantages of special classes for gifted children. Results reported by Stedman (100), Goddard (41), and Terman (103) indicated that general mental superiority and high attainment usually characterize gifted children. Hollingworth and Gray (55) showed that general superiority in attainment, according to Stanford Achievement Tests, characterizes unsegregated groups of gifted children. The investigators inferred that the advantage of segregation lies in enriched experiences rather than in greater achievement in school subjects. In evaluating reports of experiments on segregation of gifted children (79), Witty and Wilkins (121) expressed the opinion that the present classification procedure could not rightfully claim to be ''segregation of the gifted'', since in most instances it is based on the three-track grouping plan and provides for the upper ten to twenty per cent in mental ability or educational achievement.

Acceleration vs. Enrichment.—Educators have been confronted for many years with the problem of challenging gifted students. Methods of meeting the problem have consisted of rapid advancement procedures, enrich-

ment, or combinations of both principles. Defense of acceleration as a general educational policy has been advanced by Freeman (79). He argued that distinction between acceleration and enrichment is false since acceleration automatically provides enrichment. Freeman concluded that social difficulties caused by acceleration can be met by proper forms of organization. Robertson (89) outlined a plan by which Goucher College provided entrance to the sophomore year for high school students working on an accelerated program. The method of accomplishing one year's acceleration for gifted children at Montebello elementary school in Baltimore was reported by Flowers (36). In 1932 Kramer (121) reported that even if gifted children be segregated for instructional purposes, curricula and textbooks remain the same as for average groups, and enrichment consists of added work of the same type as that done by children in regular classes.

The White House Conference endorsed the enrichment theory (111). Witty (116) characterized acceleration as "an expediency measure", and advocated enrichment. Hollingworth (53) cited evidence to prove that acceleration is detrimental to gifted children socially and physically. Fowlkes (37) and Stedman (100) gathered data to justify enrichment. Sylvester (102) concluded that gifted children should not be accelerated, but that their training should be extensive so as to increase the range of knowledge, power, skill, alertness, and efficiency.

Compromise measures have been described by some investigators. Zirkle (124) proposed to accelerate gifted children to mental age level before enriching their curriculum. A three year period of elementary education for gifted children to acquire rudimentary skills, followed by work of secondary school difficulty, was suggested by Horn (59). He advised the enrichment of educational content for gifted children. Dransfield (32) studied the possibilities of enriching the curriculum for gifted children while allowing them to remain in regular classes. Units of study were prepared, including references, activities, objectives, guiding questions, and self-administering tests.

Teachers' Qualifications.—Investigators concede the teacher to be an all important factor in the education of gifted pupils. "It is the teacher's interest which will enable society to know more about the gifted child's characteristics, needs, and possibilities" (71). Atkins (3) found that a teacher had better understanding of gifted children if he looked beneath the surface and studied "instincts", "habits", "inward conflicts and repressions", and "special gifts". Schinnerer (94) compared the home-room teacher of gifted children with a "clearing-house" to whom all problems of pupils were referred for adjustment and understanding. The White House Conference (111) recommended that all teachers familiarize themselves with problems of teaching gifted pupils. After experimenting with a class of gifted pupils, Addicott (2) ascertained the advantages to the gifted child of having the teacher as an "adviser" and "guide". Goddard (41), after extended experience, observed that teachers of gifted children had characteristics in common, among which were open-mindedness, understanding, and self-control. Hollingworth (53) found unbiased attitude to be one of the most important characteristics of successful teachers of the gifted. Adams and Brown (1) listed these traits as being characteristic of teachers of gifted pupils: poise, understanding, and extensive educational background.

Size of Classes.—Adams and Brown (1) thought large classes feasible in the secondary schools where usually one teacher is responsible for only one subject. They cautioned against confusing mastery of subject matter with the "full development of the individual child". Goddard (41) considered twenty-five as the ideal number for special classes of gifted children in the elementary school.

Equipment.—An enriched curriculum requires maximum equipment. Hollingworth (53) suggested special libraries, tables, and shelves for children's exhibits. She stated that movable chairs, round discussion tables, maps, charts, globes, and miscellaneous reference books have become indispensable. The White House Conference Committee (111) affirmed Hollingworth's (53) opinion that fixed desks should give way to tables and chairs to provide freedom from regimentation.

Conclusions

1. There is need for more definite standards in the selection of gifted children.

2. Mental tests need to be supplemented by measures of ingeniousness, originality, and other characteristics which differentiate gifted children from the average.

3. Existing objective measures of physiological maturity should be related to social maturity, and social maturity to school success.

4. Annual quantitative studies of gifted children are needed through maturity.

5. Careful reports are needed on the nature and scope of curricular changes for gifted

groups, including choice of subject matter, and how to differentiate.

6. Experimental data to prove superiority of special classes are lacking.

7. Studies are needed on guidance of gifted children and evaluation of their adjustment to the world when they leave school.

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Research in the Psychology of Reading

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READING may be defined as the psychological process by which meaning is secured from printed symbols. Among the functions utilized in this process are apprehending, comprehending, reasoning and thinking. The transitive form of these terms is used to emphasize their functional rather than static nature; they are processes going on, enduring in time. Thus, the rate or duration of reading is an attribute of the psychological functions in terms of which reading is defined. In reading, the product of these functions is a memory of the material read, or, at a higher level, an appreciation of the idea or meaning which the author intended to convey.

From the above point of view, the difference between good and poor readers is that the former understand better what they read. That the differences in eye-movements, found by Gray (12), Buswell (4), Eurich (8, 9), Fairbanks (10), Anderson (1), Anderson and Swanson (3), and others, are merely symptomatic of a more fundamental difference, central in origin, is suggested by the results of numerous studies all of which have shown that eye-movements vary as a result of the central adaptations required in meeting the demands of various reading situations. Thus, Miles and Segel (14), Judd and Buswell (13), Tinker (21), Frandsen (11), Walker (25), and Anderson (1) have shown that with increased difficulty of reading material the eye-movements approach a pattern peculiar to more immature stages of reading development, i. e., there is an increase in the number of pauses, the duration of pauses, the number of regressions, and a reduction in rate of reading. These results show not only that one of the determinants of eye-movements is the difficulty of reading material to which the reader must adjust, but they suggest also that the irregularity of eye-movements, characteristic of poor reading, reflects an initial difficulty which poor readers encounter in understanding what is read.

Not only do the eye-movements respond in a highly modifiable manner to the more severe demands required of the comprehending functions by increasingly difficult material, but they are also modified by the conscious purpose for which the reading is done. Thus, Judd and Buswell (13) found differences in eye-movements between records secured from rapid, superficial reading and from slow, careful reading preparatory to answering questions. Gray (12) compared the eye-movement records of three adult subjects who, in the one case, read with the purpose of answering questions, and, in the other, with the purpose of reproducing what was read. The greatest variation from one type of reading to the other occurred in the increased number of pauses and regressions required to answer questions on the material. Vernon (23, 24), Tinker (21), Walker (25), and others have similarly found that eye-movements varied significantly with the attitude or purpose in reading.

The above studies suggested the problem of Anderson's (1) study; namely, how do the eye-movements of good and poor readers compare when the subjects adjust to instructions to read for different purposes? Anderson found that good readers showed a greater flexibility in eye-movements than poor readers. As far as eye-movements were concerned, poor readers tended to read in about the same way and with the same "mental set", regardless of the instructions given. Good readers, on the other hand, showed significant variations in eye-movements, depending upon whether the passage was read for the general idea only, a moderate understanding, or a detailed knowledge. Thus it was concluded that an essential difference between good and poor reading is the better ability of good readers to manipulate their reading to serve various ends. The fact that this ability depends upon the subjective resources of the individual emphasizes, again, the relative influence of central over peripheral factors in controlling not only changes in eye-movements, but also in determining special skill in reading.

That eye-movements are symptomatic rather than causes of poor reading has been shown very specifically in a recent study by Fairbanks (10). By means of an eye-voice camera (20) which photographed the eye-movements and the sound waves from the voice in oral reading simultaneously upon the same film, Fairbanks was able to relate the eyes and voice at any given time. An analysis of the relation between oral reading errors and eye-movements disclosed the following: (1) lack of precision in fixating error words was not a cause of the errors, because these words were fixated with as great precision as were words

upon which no errors occurred. (2) The initial eye-movements to error words did not cause the errors, because no difference was found between these fixations and those to the same point when no error was made. (3) Regressions were the only measure of eye-movements found to be related to oral reading errors; but since approximately 80 per cent of these followed the errors temporally, they cannot have caused the errors. Since Swanson (19) has shown that oral reading errors are overt representations of confusions in the comprehending aspect of reading, and in view of the fact that eye-movements are not causally related to the making of oral reading errors, it seems reasonable to conclude that, in so far as oral reading errors represent central inadequacies, eye-movements do not cause poor reading.

Another line of evidence which indicates the primacy of central over peripheral factors in determining reading ability has been presented in studies by Anderson and Fairbanks (2) and Young (26). Anderson and Fairbanks tested 220 university freshmen to determine the relationship between the abilities to understand words read and heard. One form of the Inglis Tests of English Vocabulary was used to measure reading vocabulary, while an alternate form was recorded phonographically and used to test hearing vocabulary. The correlation found between scores on the reading vocabulary test and scores on the test of hearing vocabulary was .80 (corrected for attenuation, .95). Not only was the correlation high, but the numerical difference between group means for the two measures was that between 90 on the test of hearing vocabulary and 92 on the test of reading vocabulary. Thus, it appears that vocabulary ability is a centrally determined function which, on the average, operates independently of the mode of presentation of material; and, since comprehension (understanding of the meanings of words) is the factor common to both measures, it must account for the close relationship between the two. Nor is this conclusion confined to vocabulary ability alone, because Young found a similar correlation, .80 (corrected for attenuation, .90), between the abilities of elementary school pupils to understand and retain read and heard contextual material.

If the present interpretation of the above results is sound, various schemes (15, 16, 18) for improving reading by "pacing" eye-movements seem not to be entirely justified. In this connection, Dearborn, Anderson, Alper and Reinherz (5) have photographed the eye-movements of a group of subjects reading these "pacing" materials. Although this research is not yet completed, an analysis of the preliminary results shows clearly that the reader is not forced by the nature of the exercises into making the rhythm of eye-movements indicated. In some cases there is greater irregularity of eye-movement than is shown in uncontrolled reading. In general, this finding seems not to be altered by the requirement of comprehension, the initial skill of the reader, and the period of training which has been given to date. It would appear, then, that any improvement in reading which may result must be explained on some basis other than that of the control exerted by these exercises on eye-movements as such. In an appraisal of this problem, Tinker (22) has suggested increased motivation and an emphasis on comprehension as plausible explanations for the improvement of reading resulting from training presumably confined to eye-movement "pacing". However, a decision on the problem of whether reading ability can be improved by eye-movement "pacing", alone, must be delayed until a system is developed which actually does force the reader into making the desired number of pauses per line, etc.

Even though there is this question concerning the clinical utility of "pacing" exercises at the higher scholastic levels, during the initial stages of reading there does seem to be some necessity for emphasizing the conventional left-to-right direction of reading. But even here, bizzare exercises and the expensive equipment being offered for this purpose seem unnecessary.

As Tinker (22) has suggested, a program of remedial work specifically designed to improve comprehension should result not only in an improvement of general reading ability, but the regularity of eye-movements should also be increased. However, the difficulty is that the remedial procedures for improving comprehension have not been very definitely outlined. This is due largely to the fact that the comprehending aspect of reading has been somewhat neglected in experimental research; and, that this should be the case can be explained in terms of the difficulty of objectively evaluating the factors involved.

Dewey (6, 7) has investigated some of the factors contributing to inadequate comprehending. His study is valuable not only for the results obtained, but also as indicating a method by which the comprehending phase of reading may be further investigated. The purpose of Dewey's study was to compare the way in which elementary school pupils responded to verbalistic versus non-verbalistic methods of testing reading comprehension. Dewey found

that his subjects were usually able to respond correctly in answering objective questions on the content of what was read, but when confronted with the objects or events portrayed in the passage, many of them were unable to identify these as the material on the basis of which the selection was written. Thus, after reading a passage on "flint and steel as a primitive way of making fire", they usually recognized "flint and steel" as the correct answer to a multiple-choice type of question on a primitive way of making fire; yet when confronted with a multiple-choice type of picture test, depicting not only the flint and steel method, but three other primitive methods of fire-making, they often could not identify the one correct in terms of the passage read. In other experiments it was found that although a child might respond correctly at a verbalistic level to a question concerning the boundaries of the early American colonies, he might not be able to indicate these boundaries on a map test of comprehension. On other tests based upon a rather wide range of topics in American history, similar discrepancies between verbal and non-verbal responses to questions were observed.

Another non-verbal method of testing reading comprehension has been indicated by Rhynesburger (17) in a study in which she asked a group of elementary school pupils to read a descriptive passage of a simple fireside scene, and then required them to reproduce the essential features of the description in a drawing. A comparison of the scene as portrayed in the passage with that portrayed in the drawings revealed interesting errors of omission, addition, arrangement of objects and furniture, etc. Perhaps the most interesting finding was the discovery of striking variations in the way in which different children drew the same object. The clock on the mantle was drawn as an alarm clock by some, a grandfather clock by others, and as some different type by still others.

The above studies indicate not only that any particular child might answer an objective test item correctly and then show in a picture test that his verbal answer implied no understanding, but also that experience is the basis upon which symbols are interpreted. Thus, if a child is taught the symbols for meanings which are not a part of his experience, he can only develop verbalism. The content of what a child reads, therefore, should be confined to the limits of his experience. To ignore this necessity may result in reading problems far graver than those produced by eye-defects, faulty hearing, anomalies of eyedness-handedness, and other constitutional factors.

In the teaching of reading, or any subject for that matter, how best to supply experience where it is lacking is a problem for further research. One way in which it has been done is through the use of visual aids, such as photographs, lantern slides, silent and sound pictures, drawings, maps, globes, models, and other pictures and objects. Another approach has been through the use of such concrete experiences as visits to exhibits and museums, field trips and other excursions, constructive activities, and laboratory experiments. It seems, however, that all of these are supplementary to, rather than substitutes for, the cumulative experience resulting from direct participation in the meaningful affairs of everyday life.

Summary. In this report, an attempt has been made to interpret the results of a series of related studies in such a way as to distinguish good from poor readers on the basis of differences between them in the comprehending aspect of reading rather than in terms of differences in rate, the eye-voice span, eye movements, sensory acuities, and other peripheral factors. The differences which appear between good and poor readers on these peripheral measures are merely symptomatic of, or incidental to, more fundamental differences in the comprehending and elaborative functions. The ability to comprehend and to think about what is read, in turn, depends upon and is conditioned by experience.

The present emphasis on the central determinants of reading ability seems desirable not only for the reason that reading is usually defined in terms of the meaningful interpretation of printed symbols, but also as indicating an area in which future research should yield new and significant data relative to the problems of special ability and disability in reading.

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